

Chapter 22  
Practice Test 10:  
Answers and  
Explanations

## PRACTICE TEST 10 ANSWER KEY

### Section 1: Reading

- |       |       |
|-------|-------|
| 1. B  | 27. C |
| 2. D  | 28. D |
| 3. D  | 29. B |
| 4. A  | 30. B |
| 5. D  | 31. D |
| 6. A  | 32. B |
| 7. C  | 33. B |
| 8. B  | 34. A |
| 9. C  | 35. A |
| 10. C | 36. C |
| 11. C | 37. B |
| 12. A | 38. B |
| 13. A | 39. D |
| 14. C | 40. A |
| 15. B | 41. B |
| 16. B | 42. B |
| 17. D | 43. B |
| 18. D | 44. D |
| 19. A | 45. D |
| 20. B | 46. D |
| 21. C | 47. B |
| 22. B | 48. A |
| 23. A | 49. B |
| 24. C | 50. C |
| 25. B | 51. D |
| 26. A | 52. D |

### Section 2: Writing & Language

- |       |       |
|-------|-------|
| 1. C  | 23. A |
| 2. D  | 24. D |
| 3. D  | 25. C |
| 4. A  | 26. D |
| 5. B  | 27. D |
| 6. C  | 28. C |
| 7. A  | 29. B |
| 8. D  | 30. A |
| 9. B  | 31. D |
| 10. B | 32. B |
| 11. B | 33. A |
| 12. D | 34. A |
| 13. C | 35. C |
| 14. A | 36. D |
| 15. B | 37. A |
| 16. A | 38. C |
| 17. A | 39. B |
| 18. C | 40. C |
| 19. D | 41. B |
| 20. B | 42. B |
| 21. A | 43. A |
| 22. D | 44. B |

### Section 3: Math (No Calculator)

- |       |                      |
|-------|----------------------|
| 1. C  | 13. A                |
| 2. D  | 14. B                |
| 3. A  | 15. B                |
| 4. D  | 16. 17               |
| 5. B  | 17. 6                |
| 6. C  | 18. 3                |
| 7. D  | 19. 22               |
| 8. C  | 20. $\frac{14}{8}$ , |
| 9. A  | $\frac{7}{4}$ ,      |
| 10. C | or 1.75              |
| 11. A |                      |
| 12. B |                      |

### Section 4: Math (Calculator)

- |       |          |
|-------|----------|
| 1. B  | 20. C    |
| 2. D  | 21. A    |
| 3. C  | 22. C    |
| 4. A  | 23. C    |
| 5. B  | 24. D    |
| 6. A  | 25. D    |
| 7. C  | 26. A    |
| 8. B  | 27. C    |
| 9. D  | 28. A    |
| 10. C | 29. D    |
| 11. A | 30. B    |
| 12. A | 31. 14   |
| 13. A | 32. 66   |
| 14. B | 33. 9    |
| 15. C | 34. 6    |
| 16. B | 35. 0.6  |
| 17. B | 36. 0.11 |
| 18. A | 37. 1.3  |
| 19. B | 38. 9.6  |

### Section 5: Experimental (Writing & Language)

- |      |       |       |       |
|------|-------|-------|-------|
| 1. A | 6. B  | 11. A | 16. A |
| 2. A | 7. D  | 12. D | 17. C |
| 3. C | 8. C  | 13. D | 18. A |
| 4. D | 9. C  | 14. B |       |
| 5. B | 10. C | 15. B |       |

Go to [PrincetonReview.com](http://PrincetonReview.com) to score your exam. Alternatively, for self-assessment tables, please turn to page 909.

## PRACTICE TEST 10 EXPLANATIONS

### Section 1: Reading

- B** The question asks how the main focus of the passage shifts from the beginning to the end. Because this is a general question, it should be done after the specific questions. The passage begins with the narrator's description of her family's *house-dwelling life* in a house built *across the road from a lake*. She continues with a description of the family's business running a *dance pavilion* with live music and dancing throughout the summer. In the third paragraph, the story focus changes when her father *moved his office into his car* and they drove around buying and selling antiques. The narrator describes her father's *lifelong wanderlust* and how he would suddenly decide it was time to go somewhere else. Eliminate any answer choices that are not consistent with this structure. Choice (A) can be eliminated because there is no *portrayal of a significant place the family often visited* in the passage. Choice (B) is consistent with the shift from her description of life in the summer house to life on the road. Choice (C) can be eliminated because the descriptions in the first part of the passage are concrete descriptions of the narrator's childhood rather than an *allegorical display of domesticity*. Choice (D) can be eliminated because the passage is not an examination of the narrator's childhood financial situation. The correct answer is (B).
- D** The question asks about the main purpose of the second paragraph. Carefully read the paragraph to determine the central focus. Throughout the paragraph, the narrator describes the dance pavilion her father ran during the summer. He *dreamed up such attractions as a living chess game* and *booked the big dance bands of the 1930s and 1940s*. She says that people would come from *as far away as Toledo or Detroit*, but that *paying the likes of Guy Lombardo or Duke Ellington... meant that one rainy weekend could wipe out a whole summer's profits*. This paragraph establishes the idea that the narrator's father is a man with big ideas who doesn't always play it safe. Eliminate any answer choices that aren't consistent with this idea. Choice (A) can be eliminated because there is no discussion of the father's *compulsive desire to travel* in this paragraph. Choice (B) can also be eliminated, because no one important to the *narrator's remembrances* is *introduced* in this paragraph. Choice (C) might initially look good, but the father is actually bringing in the famous acts rather than suffering *delusions of grandeur*, and while his decisions *could wipe out the summer's profits*, that's a risk that is being described rather than an actual negative outcome. Eliminate (C). Choice (D) is consistent with the prediction. The correct answer is (D).
- D** The question asks what the word *precarious* means in line 24. Go back to the text, find the word *precarious*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. The narrator describes the family's livelihood as *precarious* after saying that her father's business decisions could *wipe out a whole summer's profits*, which always gave them *a sense of gambling*. The word *precarious* describes their livelihood as "risky" or "a gamble." Eliminate anything that is not consistent with this prediction. Choices (A) and (B) can be eliminated because there is no mention of their family's financial situation in either answer. Choice (C) might be true in the life of the narrator, but the word *precarious* is used here to highlight the riskiness of the financial situation, so eliminate (C). Choice (D) is a clear paraphrase of the prediction. The correct answer is (D).
- A** The question asks about the narrator's participation in the *family business*. Use chronology to find the window that talks about the family business and read carefully. The narrator says that *from the age of four, she came into [her] own as the wrapper and unwrapper of china*. She goes on to say that each of the family members *had a role in the family economic unit*, including her older



sister, who *sold popcorn from a professional stand*. The correct answer should be consistent with the idea of the narrator having her own job within the family business from a young age. Choice (A) is consistent with this idea, so keep it. Choice (B) might be initially attractive, but there is no mention in the text of the time either sister spent doing her job. Choices (C) and (D) can be eliminated because there is no mention in the passage of money, getting paid, or volunteering. The correct answer is (A).

5. **D** The question asks which statement the narrator's father would most likely agree with. Notice that this is the first question in a paired set, so it can be done in tandem with Q6. Begin with the answers to Q6. The lines for (6A) say that there were only *a few months each year* when her father was *content with a house-dwelling life*. These lines support (5D), so draw a line connecting those two answer choices. The lines for (6B) say that her father loved the risks of the summer business. These lines do not support any of the answer choices for Q5, so eliminate (6B). The lines for (6C) say that everyone *had a role in the family economic unit* and then go on to explain her sister's role. These lines don't support any of the answers for Q5, so eliminate (6C). The lines for (6D) say that he *refused to put heating or hot water* in their house. Those lines might initially seem to support (5C), but read carefully. The father is not concerned about *the expense* of the water heater; he is concerned about the permanence of it. Eliminate (6D). Without support from Q6, (5A), (5B), and (5C) can all be eliminated. The correct answers are (5D) and (6A).
6. **A** (See explanation above.)
7. **C** The question asks what the word *struck* means in line 48. Go back to the text, find the word *struck*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. The narrator describes how her father is preparing to travel by *collecting road maps...*, *testing the trailer hitch...*, and *talking about faraway pleasures*. Then she says he announces it's time to go *as if struck by a sudden whim rather than a lifelong wanderlust*. The missing word must mean "suddenly decided" or "just realized." Eliminate anything that isn't consistent with this prediction. Choice (A), *battered*, is a definition of *struck*, but it doesn't mean "suddenly decided." Eliminate (A). Choice (B), *boycotted*, means "abstained from buying," which does not match the prediction. Eliminate (B). Choice (C), *inspired*, is consistent with the prediction, so keep it. Choice (D), *disturbed*, can be eliminated because it does not mean "suddenly decided" or "just realized." The correct answer is (C).
8. **B** The question asks why the father started the cross-country trip. Notice that it is the first question in a paired set, so it can be done in tandem with Q9. Begin with the answers to Q9. The lines for (9A) refer to the family's antiquing business, driving to *nearby country auctions* to search for antiques. There is no mention of the *cross-country trip*, so these lines do not support any of the answers for Q8. Eliminate (9A). The lines for (9B) describe the father's specific actions as he prepares for the trip, including *collecting road maps...*, *testing the trailer hitch...*, and *talking about faraway pleasures*. These lines provide details about the trip, but they do not give the *reason* the trip started. Eliminate (9B). The lines for (9C) refer to the father's *lifelong wanderlust* when he announces it's time to go. These lines support (8B), so draw a line connecting those two answers. The lines for (9D) describe the speed of the *leave-taking*, but do not offer a reason for it. Eliminate (9D). Without support from Q9, (8A), (8C), and (8D) can all be eliminated. The correct answers are (8B) and (9C).
9. **C** (See explanation above.)
10. **C** The question asks about the mother's role in the family. Carefully read the window where the mother is mentioned. She is first mentioned in line 28 when the narrator discusses the family antiquing business. She says that her mother had a *better eye for antiques and reference books* and



was the one who *appraised them for sale*. Then, in the last paragraph (lines 71–77), the narrator again mentions her mother as the one who remembered the iron was still on and *might be burning its way through the ironing board*. The correct answer should have something to do with the mother being reasonable and practical in the family. Choice (A) can be eliminated because there is no evidence that she *resented* her husband’s *impulsive nature*. Choice (B) can also be eliminated because she goes along with her husband, but there is no evidence in the text that she *shared the... wanderlust equally*. Choice (C) is consistent with the prediction, so keep it. Choice (D) can be eliminated because, although she was worried about the iron, it did not actually set the house on fire. The correct answer is (C).

11. C The question asks about the primary purpose of the passage. Because it is a general question, it should be done after the specific questions have been completed. The passage begins by introducing the idea that liars and bluffers have *tells* that indicate when they aren’t being truthful. The passage then expands this idea into a discussion about a pair of Stanford researchers who identified patterns that show up in reports with falsified data and could potentially be used to spot fraudulent papers. The passage ends with a warning that systems designed to detect fraudulent papers by simply counting words could have negative repercussions. The correct answer should be consistent with this prediction. Eliminate (A) because this passage is not *defend[ing]* anyone. Choice (B) can also be eliminated because the passage is focused on scientific publications, not *different industries and research fields*. Choice (C) is consistent with the prediction, so keep it. Eliminate (D) because the passage is about research into detecting fraud, not *reveal[ing] secrets* of those who successfully lie. The correct answer is (C).
12. A The question asks about the function of the first paragraph. Carefully read the paragraph to determine the author’s reason for including the given information. The paragraph begins by mentioning how *poker players* have “tells” that give away *when they’re bluffing*. The paragraph goes on to say that this idea of *tells* can also happen with *scientists* who *commit fraud* by attempting to *pass along falsified data*. The paragraph ends by saying *a pair of Stanford researchers* have *cracked the writing patterns* of the tells, which could help *identify falsified research* before it is published. The paragraph is there to provide context for research discussed later in the passage. Eliminate any answer choices that are not consistent with that prediction. Choice (A) is consistent with the prediction, as the paragraph introduces the concept of *tells*, which is what the later research is about. Keep (A). Choice (B) can be eliminated because there is no mention in the paragraph of *additional applications* of the research results. Choice (C) can be eliminated: although there is mention of *fraud detection*, the paragraph does not introduce *general methods* of fraud detection. Choice (D) can be eliminated because the idea is not *questioned* later in the passage, but expanded upon. The correct answer is (A).
13. A The question asks what the word *fair* means in line 10. Go back to the text, find the word *fair*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. The text says that there is a *fair amount of research* dedicated to understanding how liars lie. The text continues with a mention of the results of some of these studies. The missing word must mean something like “enough” or “plenty.” Eliminate any answer choices that aren’t consistent with that prediction. Choice (A), *ample*, is consistent with “plenty,” so keep it. Choice (B), *lawful*, can be eliminated because there is no mention in the text about the legality of the evidence. Choice (C) can be eliminated because the amount of research is not compared to anything else, so it can’t be *equal*. Choice (D) can be eliminated because the text focuses on the amount of research, not the quality of the research or whether the outcomes were positive or negative. The correct answer is (A).

14. **C** The question asks what the word *obscure* means in line 40. Go back to the text, find the word *obscure*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. The passage says that scientists who don't want to get caught *committing a misconduct* may *obscure parts of the paper*. The text also says that these same fraudsters may *muddle the truth*. Therefore, the missing word must mean something like "muddle" or "confuse." Eliminate anything that isn't consistent with this prediction. Choice (A) might initially look good because the scientists would want to *hide* the fact that they are lying. However, *hide* does not mean "muddle" or "confuse," and the scientists aren't actually hiding parts of their papers. Eliminate (A). Choice (B), *blind*, can be eliminated because the scientists are trying to make parts of their papers "confusing," not *blind[ing]*. Choice (C), *distort*, is consistent with "muddle" or "confuse," so keep it. Choice (D), *characterize*, is not consistent with the predictions at all. Eliminate (D). The correct answer is (C).
15. **B** The question asks how papers with fraudulent data can be spotted. Notice that this is the first question in a paired set, so it can be done in tandem with Q16. Begin with the answers to Q16 first. The lines for (16A) say that the [rating] was done through *summary score of causal terms, abstract language, jargon, positive emotion terms and...an ease of reading score*. These lines explain how the obfuscation index was determined, but there are no specifics about how to spot the papers that are fraudulent. These lines do not support any of the answers for Q15, so eliminate (16A). The lines for (16B) say that *fraudulent retracted papers scored significantly higher on the obfuscation index*. These lines indicate that a fraudulent paper will have a higher obfuscation index, which would mean more *abstract language and jargon*. These lines could support (15B), so draw a line connecting those two answers. The lines for (16C) say that a *fraudulent author* may use *fewer positive emotion terms*. While this could be a way to spot a fraudulent paper, these lines do not support any of the answer choices for Q15. Eliminate (16C). The lines for (16D) talk about a *computerized system* that might be able to *flag a submitted paper*. These lines don't give any specifics about how to spot the paper, so these lines don't support any of the answers for Q15. Eliminate (16D). Without support from Q16, eliminate (15A), (15C), and (15D). The correct answers are (15B) and (16B).
16. **B** (See explanation above.)
17. **D** The question asks which hypothetical situation Hancock would most likely agree could be a consequence of action without further research. Notice that this is the first question in a paired set. Although *Hancock* could be a good lead word, the whole passage is about his experiment, so his ideas are not in once place. Do this question in tandem with Q18. Begin with the answer choices for Q18. The lines for (18A) refer to avoiding getting caught publishing fraudulent data by *obscur[ing] parts of the paper*. These lines don't support any of the answers for Q17, so eliminate (18A). The lines for (18B) talk about the *publish or perish* mentality that motivates researchers to publish manipulated or fake findings. These lines do not support any of the answers for Q17, so eliminate (18B). The lines for (18C) warn of the *false-positive rate* of the computerized fraud-detection system. These lines might seem to connect to (17A) because both mention *computer programs*, but there is no connection between the ideas or to the question. Eliminate (18C). The lines for (18D) refer back to the *high error rate*, and also say that *science is based on trust* and if a publication introduces a *fraud detection tool*, it might *undermine that trust*. These lines support (17D), so draw a line connecting those two answers. Without support from Q18, (17A), (17B), and (17C) can all be eliminated. The correct answers are (17D) and (18D).
18. **D** (See explanation above.)

19. **A** The question asks which category of language had the greatest difference between the *language used in fraudulent research* and that used in *genuine research*, according to the graph. The difference between the two in Means and Methods is a little over 200, so keep (A) for now. The difference between them in Amplifiers is less than 100, so eliminate (B). Quantities has a difference of about 125, so eliminate (C). Emotional States has a difference of about 75, so eliminate (D). The correct answer is (A).
20. **B** The question asks which of the statements is supported by the graph. Go through each of the answer choices and eliminate anything not supported by the graph. Eliminate (A) because *Quantities* is higher in Genuine Publications rather than Fraudulent ones. Keep (B) because the bars for *Means and Methods* and *Certainty* are about the same for Fraudulent publications. Eliminate (C) because the Genuine publications have higher occurrences of *Negations* than the Fraudulent publications. Eliminate (D) because there is no consistency for *Amplifiers* and *Diminishers*. The correct answer is (B).
21. **C** The question asks which statement supports the idea that *jargon* could be classified as *means and methods*, using both the graph and the passage. Carefully read each answer choice and eliminate any that do not address the connection between *jargon* and *means and methods*. Choice (A) can be eliminated because it is only a general statement that scientists who falsify data have certain writing patterns they use. There is no specific connection to *jargon* or the graph. Choice (B) mentions a specific characteristic of the writing of liars in general, but there is no connection to the study discussed in the passage. Eliminate (B). Choice (C) says that the *fraudulent papers* had *60 more jargon-like words per paper*. The graph shows that fraudulent papers contain more *Means and Methods* language than genuine papers, so that could support the idea in question. Keep (C). Choice (D) simply says that *more research is needed*, with no specifics about types of language or types of papers. Eliminate (D). The correct answer is (C).
22. **B** The question asks about a main idea of the passage. Because this is a general question, it should be done after the specific questions have been completed. The passage begins with an introduction of a new, blue pigment, a *serendipitous discovery* made while *researching materials for electronics applications*. The passage then goes on to describe how the pigment was discovered, what makes the pigment particularly notable, and ends with a discussion of further discoveries that have resulted from the discovery of this pigment. Eliminate any answers that are inconsistent with the ideas in the passage. Choice (A) can be eliminated because there is no discussion of how the pigment is *dangerous*. Choice (B) is consistent with the idea of a *serendipitous discovery* of a *superior* new pigment. Choice (C) is consistent with the passage naming the new pigment by its chemical composition, but that is not the *main idea* of the passage, nor is there mention of the chemical composition being the *most effective* way to describe a pigment. Eliminate (C). Choice (D) can be eliminated because it is too narrow: the relationship between *UV absorbance* and *pigment stability* is mentioned in the passage, but it is not the *main idea*. The correct answer is (B).
23. **A** The question asks about the *overall structure of the passage*. Because this is a general question, it should be done after the specific questions have been completed. The passage begins with an introduction of a new pigment, goes on to describe how the pigment was discovered and what makes the pigment particularly notable, and then ends with a discussion of further discoveries that have resulted from the discovery of this pigment. Eliminate any answer choices that aren't consistent with this prediction. Choice (A) is similar to the prediction, so keep it. Choice (B) can be eliminated because the focus of the passage is the new, synthetic pigment. There is no *natural alternative* presented. Choice (C) can also be eliminated because only one accidental discovery is mentioned, rather than *several accidental discoveries*. Choice (D) can be eliminated because there is no discussion about how compounds *work together* in the passage. The correct answer is (A).



24. **C** The question asks what the word *applications* means in line 5. Go back to the text, find the word *applications*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. The text says that a scientist discovered the pigment while *researching materials for electronics applications*. It goes on to say that the researchers were trying to create a *high-efficiency electronic material*. The missing word must mean something like “functions” or “materials.” Eliminate (A), *requests*, because it does not mean “functions.” Choice (B), *forms*, can also be eliminated because it is not consistent with the prediction. Choice (C), *uses*, is consistent, so keep it. Choice (D), *industries*, might initially look attractive, but the text says that they were trying to develop *material* rather than “businesses.” Eliminate (D). The correct answer is (C).
25. **B** The question asks for the best evidence that Smith did not intend for his experiment to produce the results it did. Carefully read each of the lines provided and eliminate any that do not answer the question. Choice (A) can be eliminated because the lines simply describe the pigment, not an experiment or results. Choice (B) answers the question, saying that *instead of...high-efficiency material, what emerged...was a brilliant blue compound*. Keep (B). Choice (C) can be eliminated because the patent process is not related to the discovery process. Choice (D) can also be eliminated because those lines indicate the researchers are continuing to research the accidental discovery, hoping to find additional new pigments. The correct answer is (B).
26. **A** The question asks what the word *unstable* means in line 21. Go back to the text, find the word *unstable*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. The text describes blue pigments as *notoriously unstable* and then goes on to say that they *fade easily*. The missing word must mean something like “fades easily” or “doesn’t last.” Eliminate any answer choices that are inconsistent with this prediction. Choice (A), *impermanent*, means “doesn’t last.” Keep (A). Choice (B) can be eliminated because the pigments are not *threatening*. Choice (C) can be eliminated because *careless* does not mean the same thing as “doesn’t last.” Choice (D) might initially look attractive because the passage does mention *ancient times*, but *antiquated* does not mean “doesn’t last.” Eliminate (D). The correct answer is (A).
27. **C** The question asks which factor has been identified as *most indicative of stable pigments*. In lines 22–25, the author says that the fact that *this pigment was synthesized at such high temperatures* signaled to researchers that *this new compound was extremely stable*. Therefore, synthesis at high temperatures indicates a stable compound. The correct answer is (C).
28. **D** The question asks about the relationship between the *YInMn Blue pigment and the Cobalt Blue pigment currently used*. The fifth paragraph, lines 33–37, discusses the relationship between the two pigments. The paragraph says that  $YIn_{1-x}Mn_xO_3$  *exhibits high absorbance in the UV region and high reflectivity in the near-infrared region when compared to currently-used Cobalt Blue pigments*. Therefore, Cobalt Blue has *lower UV absorbency and lower reflectivity in the near-infrared region*. Eliminate any answer choices that aren’t consistent with this prediction. Eliminate (A): although the text mentions *outdoor weathering*, YInMn is superior to Cobalt Blue for exterior applications. Choice (B) can be eliminated because, although YInMn can be *chemically-adjusted*, it was not *specifically engineered* to be so. Choice (C) can be eliminated because there is no discussion of the comparative difficulty of engineering purple, YInMn, or Cobalt Blue. Choice (D) is consistent with the prediction. The correct answer is (D).
29. **B** The question asks for the best evidence for the answer to the previous question, so simply look at the lines used to answer Q28:  $YIn_{1-x}Mn_xO_3$  *exhibits high absorbance in the UV region and high reflectivity in the near-infrared region when compared to currently-used Cobalt Blue pigments*. This statement is in lines 34–37. The correct answer is (B).

30. **B** The question asks at which wavelength  $\text{CoAl}_2\text{O}_4$  has a reflectance of 0.4%. Go to Figure 2 and find the reflectance of 0.4. Draw a line across the graph and see which wavelengths correspond to that reflectance. There are several places where  $\text{CoAl}_2\text{O}_4$  has a reflectance of 0.4%, but the only one that is an answer choice is 1800 nm. The correct answer is (B).
31. **D** The question asks which range of wavelengths illustrates the thermal advantages of YInMn Blue over Cobalt Blue based on both the graph and the passage. The passage says that *high solar reflectance [of YInMn Blue] indicates that this 'cool pigment' can find use in a variety of exterior applications by reducing surface temperatures, cooling costs, and energy consumption*. Eliminate any answer choices that aren't consistent with this prediction. Choices (A), (B), and (C) all offer wavelength ranges in which the reflectance for YInMn Blue and Cobalt Blue are similar. This would not give YInMn Blue any thermal advantages, so eliminate all three. Choice (D), 1200–1400, gives a range in which the reflectance of YInMn Blue is much higher than Cobalt Blue, which, according to the passage, would give YInMn Blue an advantage. The correct answer is (D).
32. **B** The question asks what the word *present* means in line 3. Go back to the text, find the word *present*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. The author says that he is trying to be clear about the *disordered condition of...currency and the present dangers*, while also trying to *suggest a way which leads to a safer financial system*. He is contrasting the current situation with what he hopes will be a better situation in the future. The missing word must mean something like “at this moment” or “at this time.” Eliminate any answers that aren't consistent with that prediction. Choice (A), *prompt*, means that something happens right away, but not necessarily “at this time.” Eliminate (A). Eliminate (C) for the same reason. Choice (B), *current*, is consistent with “at this time,” so keep (B). Choice (D) can be eliminated because *present* and *gifted* might seem similar, but *gifted* does not mean “at this time.” The correct answer is (B).
33. **B** The question asks what Passage 1 suggests about those who support implementing the bimetallic system of currency. Notice that this is the first question in a paired set, so it can be done in tandem with Q34. Read the lines for Q34 first. The lines for (34A) say that *many countrymen...insist that the cure for the ills is the free coinage of silver*. These lines support (33B), so draw a line connecting those two answers. The lines for (34B) say that those who support the bimetallic system think *mints shall be...thrown open to the free, unlimited, and independent coinage of both gold and silver*. These lines don't support any of the answers to Q33, so eliminate (34B). The lines for (34C) say that those who believe *independent coinage...would restore the parity between the metals...oppose an unsupported and improbable theory*. While these lines do describe those who support the bimetallic system, these lines don't support any of the answers for Q33. Eliminate (34C). The lines for (34D) say that the ideas *run counter to our own actual experiences*. These lines give the author's feelings about the system, but not about those who support the system. The lines don't support any of the answers for Q33, so eliminate (34D). Without support from Q34, (33A), (33C), and (33D) can be eliminated. The correct answers are (33B) and (34A).
34. **A** (See explanation above.)
35. **A** The question asks why Cleveland refers to Acts of Congress, which is in line 50. Go back to the text and carefully read the window to determine why he mentions them. The line says that the Acts of Congress were *impotent to create equality where natural causes decreed even a slight inequality*. The correct answer must have something to do with the idea that the Acts of Congress could not create equality when outside forces set up an inequality. Choice (A) is a direct paraphrase of this prediction, so keep it. Choice (B) can be eliminated, because Cleveland mentions the acts to show a contrast, not to *summarize* anything. Choice (C) can be eliminated because the acts



- would not be a viable *alternative* if they are *impotent to create equality*. Choice (D) can be eliminated for the same reason as (C). The correct answer is (A).
36. **C** The question asks what the word *idle* means in line 66. Go back to the text, find the word *idle*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. The text contrasts the *idle holders of idle capital* with the *struggling masses who produce the wealth and pay the taxes*. Therefore, the missing word must mean something like “not working” or “not producing anything.” Eliminate any answer choices that aren’t consistent with that prediction. Choice (A) can be eliminated, because the holders of the capital have not *abandoned* anything. Choice (B) might initially make sense, because those who hold a great deal of money are likely to be *ambitious*, but *ambitious* does not mean “not producing anything.” Eliminate (B). Choice (C), *inactive*, is consistent with “not working.” Keep (C). Choice (D), *cheap*, is not consistent with the prediction, so it can be eliminated. The correct answer is (C).
37. **B** The question asks which claim Bryan would most likely agree with about the gold standard controversy. Notice that this is the first question in a paired set, so it can be done in tandem with Q38. Begin with the answers to Q38 first. The lines for (38A) say that if the gold standard is the standard of civilization, *should we not have it?* Those lines could support (37A), so draw a line connecting those two answers. The lines for (38B) say that a person could *search the pages of history in vain to find a single instance in which the common people...declared themselves in favor of a gold standard*. Those lines support (37B), so draw a line connecting those two answer choices. The lines for (38C) say that *the sympathies of the Democratic Party...are on the side of the struggling masses*. These lines don’t mention anything about Bryan’s views about the gold standard controversy, and these lines don’t support any of the answer choices for Q37. Eliminate (38C). The lines for (38D) say what others believe about legislation to make the *well-to-do prosperous*, but there is no mention of Bryan’s thoughts about the gold standard controversy. Eliminate (38D). Go back to the remaining pairs of answer choices and reread the question. The question asks which statement *Bryan would be most likely to agree with*. Choices (37A) and (38A) present an idea that Bryan refutes later in the passage, so eliminate those two answer choices. The correct answers are (37B) and (38B).
38. **B** (See explanation above.)
39. **D** The question asks how both passages discuss the issue of the gold standard. Because this question asks about both passages, it should be done after the questions are done for each individual passage. Use POE to go through the answers one passage at a time. Passage 1 mentions *Acts of Congress* in line 50, *economists* in line 35, and *other nations* in line 34. Because Passage 1 does not mention *the Democratic Party*, eliminate (B). Now look for the remaining three answers in Passage 2. Passage 2 does not mention *Congress* or *economists*, so eliminate (A) and (B). Passage 2 mentions *all nations of the earth* in line 54. The correct answer is (D).
40. **A** The question asks how the two historical references mentioned help each speaker. The reference in Passage 1 says that *twice in our earlier history* and the Passage 2 reference says that someone *said in 1878 that this was a struggle*. Both of these references show this debate occurring in the past, which allows both speakers to say something to the effect of, “We’ve been talking about this for a while now.” Eliminate any answer choice that is not consistent with this prediction. Choice (A) is a direct paraphrase of the prediction, so keep it. Choice (B) can be eliminated because there is no *established precedent*, just an idea that’s been discussed previously. Choices (C) and (D) can be eliminated because the lines neither *challenge* nor *question* any of the ideas in the debate. The correct answer is (A).



41. **B** The question asks about a *central tension* between the passages. Because this is a general question about both passages, it should be done after all the other questions have been completed. Use POE to go through the answers one passage at a time. Choice (A) can be eliminated because Cleveland is not advocating for *new legislation to enact the gold standard*. He is against the gold standard and says that *Acts of Congress were impotent to create equality* when the market said otherwise. Choice (B) looks good for Passage 1, because Cleveland is *questioning* the validity of the *free coinage bimetallic* proposal, so keep (B) for now. Choice (C) can be eliminated because Cleveland does not *demand gold standard proponents reconsider their position*. Choice (D) can be eliminated, because Cleveland never *presents studies*. The correct answer is (B).
42. **B** The question asks about the primary purpose of this passage. Because this is a general question, it should be done after the specific questions are complete. The passage begins with introducing the discovery of a *parasitic fungus* that manipulates *the behavior of ants*. The passage goes on to describe the research and the fungus. The primary purpose of the passage is to explain a new discovery. Eliminate any answers that aren't consistent with this prediction. Choice (A) can be eliminated because the passage was not written to *correct any misconception*. The first part of (B), *present the findings*, is consistent with the prediction, and the second part of the answer choice is supported by the final sentence of the passage (*The research also is...the first extensive study of zombie ants in North America*). Choice (C) can be eliminated because a new fungus has been discovered, not a new ant. Choice (D) can be eliminated because the passage does not explain differences between types of relationships. The correct answer is (B).
43. **B** The question asks why fungi have evolved to control the behavior of the ants. Go back to the text and find the window in which the author discusses how the fungi works. In the second paragraph, the author says that the fungus species that infects ants *induces hosts to die attached by their mandibles to plant material*. The author goes on to say that the dead ant attached to the plant provides *a platform from which the fungus can grow and shoot spores to infect other ants*. Find an answer that is consistent with this information. Choice (A) can be eliminated because the fungus spreads through spores, not through bite wounds. Choice (B) is consistent with the information in the text, so keep it. Choice (C) can be eliminated because the text says the fungus wants the ant to die attached to a plant. Choice (D) can be eliminated because it is the opposite of what the text says. The correct answer is (B).
44. **D** The question asks about the role of the *Formica* ant in the passage. Use the lead word to find the window and read carefully to determine why the author mentions the *Formica* ant. In line 37, the author mentions the *Formica* ant as *another genus* of ant not normally targeted by the fungus. Researchers infected the *Formica* ants as well as ants from the *Camponotus* genus, the genus typically targeted by the fungus. Eliminate any answer choices that aren't consistent with the prediction. Choice (A) can be eliminated because the scientists already know that the *Formica* ants are *nontarget ants*. Choice (B) can be eliminated for the same reason as (A): *Formica* ants aren't *most affected* because they are *nontarget ants*. Choice (C) can be eliminated because it doesn't address the role of the ant in the research. Choice (D) is consistent with the prediction. The correct answer is (D).
45. **D** The question asks what tone the author communicates with the use of phrases such as *exquisite control...*, *most complex examples...*, and *impressive trick*. Use the lines provided to find the window, and read carefully for context. The phrases come from a quote from one of the researchers talking about how evolved the fungus is. The use of the words *exquisite* and *impressive* gives a positive tone, so eliminate (B) and (C). There is no evidence that the researcher is *amused* by the fungus, but he is impressed. Eliminate (A). The correct answer is (D).

46. **D** The question asks about a scenario in which zombie ant fungi would not successfully reproduce. Carefully read the second paragraph, in which the fungus reproduction is explained. The fungus infects *Camponotus* ants and induces [them] to die attached by their mandibles to plant material. The dead ant, attached to the plant, provides a platform from which the fungus can grow and shoot spores to infect other ants. Because this is a *NOT* question, cross out the *NOT* and mark each answer choice as “true” or “false.” Choice (A) is true. Although the fungus cannot control the *Formica* ant, it can infect and kill it. Keep (A). Choice (B) is true, so keep it. Choice (C) is true, so keep it. Choice (D) is false. A *Formica* ant that doesn’t die on a plant will not provide any sort of platform for the fungus to grow from. The correct answer is (D).
47. **B** The question asks what the word *media* means in line 43. Go back to the text, find the word *media*, and mark it out. Carefully read the surrounding text to determine another word that would fit in the blank based on the context of the passage. The text describes the experiment and how the researchers removed ant brains and then kept them alive in special *media*. The missing word must mean something like “material” or “substance.” Eliminate anything that is not consistent with this prediction. Choice (A), *communications*, might initially seem to be consistent with the word *media*, but it does not mean “substance” or “material.” Eliminate (A). Choice (B) is consistent with the prediction, so keep it. Choice (C), *channels*, and (D), *periodicals*, may also be tempting because of the connection with *media*, but neither of those words is consistent with the prediction. The correct answer is (B).
48. **A** The question asks which part of the research was most effective for obtaining an unprecedented amount of information. The text says that the researchers found thousands of unique chemicals, most of them completely unknown. That is the *unprecedented information*, but remember that the question is asking about the *part of the research* that allowed them to obtain that information. Carefully read the window. The researchers were able to find out this information by growing the fungus in the presence of brains from different ant species to determine what chemicals it produced for each brain (lines 44–46). Eliminate any answer choice that is not consistent with this prediction. Choice (A) is an exact paraphrase of the prediction, so keep it. Choice (B) was a part of the process, but not the one that allowed them to obtain all the information. Eliminate it. Choice (C), as with (B), was a part of the research, but not the key piece. Eliminate (C). Choice (D) might initially look attractive, but the scientists weren’t actually looking at the fungus in the ant brains. Eliminate (D). The correct answer is (A).
49. **B** Lines 44–46 were used to answer the previous question. The correct answer is (B).
50. **C** The question asks about a unique outcome of the chemicals produced by the fungus. Notice that this is the first question in a paired set, so it can be done in tandem with Q51. Consider the answer for Q51 first. The lines for (51A) introduce the fungus, but don’t mention anything about the chemicals the fungus produces. Eliminate (51A). The lines for (51B) say that the killer can infect and kill nontarget ants but cannot manipulate their behavior. These lines do not support any of the answers for Q50. Eliminate (51B). The lines for (51C) say the fungus behaved differently in the presence of the ant brain it had co-evolved with. These lines could look attractive on their own, but they do not support any of the answers for Q50. Eliminate (51C). The lines for (51D) say that the fungus/ant relationship is one of the most complex examples of parasites controlling animal behavior. These lines support the idea in (50C) that the complexity of this relationship is different than those usually found in nature. Draw a line connecting those two answers. Without support from Q51, (50A), (50B), and (50D) can be eliminated. The correct answers are (50C) and (51D).
51. **D** (See explanation above.)

52. **D** The question asks what type of evidence the team mostly used while studying the zombie ants. Most of their work took place in the lab, so eliminate (A). Choice (B) can also be eliminated because researchers were making observations rather than *predictions*. Choice (C) might initially look attractive, but the researchers were using the brains of *ants* in their research. Choice (D) is consistent with information in the passage. The correct answer is (D).

## Section 2: Writing and Language

- C** The vocabulary is changing in the answer choices, so this question is testing precision of word choice. Look for a word whose definition is consistent with the other ideas in the passage. The sentence discusses the *presence of blue recycling bins*, and the next sentence says that *most people are used to separating recyclable materials*. The underlined portion is preceded by *no longer*, so the definition should mean “out of the ordinary.” An *innovation* is “a new way of doing something.” While this is close, it is not the bins themselves that were an innovation, so eliminate (A). A *deviation* is “a departure from the norm.” While this is close, the bins were not “going against the system,” so eliminate (B). A *novelty* is “something new and unusual.” The presence of the bins is now a normal, everyday sight, so keep (C). A *miracle* is “an extraordinary event,” so eliminate (D). The correct answer is (C).
- D** Note the question! The question asks for the choice that *best maintains the style and tone of the passage*, so it tests consistency. Eliminate any answer choices that are inconsistent with the purpose stated in the question. The tone of the passage is somewhat formal, so eliminate any answer choices that are informal or slangy. *Kicking off*, *fixing to start*, and *getting in gear* are all too informal for the passage, so eliminate (A), (B), and (C). *Gaining traction* matches the tone of the passage. The correct answer is (D).
- D** The punctuation is changing in the answer choices, so the question tests how to connect ideas with the appropriate punctuation. Note that the sentence ends with a closed parenthesis. Therefore, the phrase must start with an open parenthesis; eliminate (B) and (C). There is no reason to use a dash to separate an idea already separated by parentheses, so eliminate (A). The correct answer is (D).
- A** Note the question! The question asks for information that is *consistent with the description of textiles*. *Clothing* is a type of textile, so keep (A). *Paper*, *rubber*, and *wood* are not textiles, so eliminate (B), (C), and (D). The correct answer is (A).
- B** Note the question! The question asks for information that is supported by the graph, so it tests consistency. Read the labels on the graph carefully, and look for an answer that is consistent with the information given in the graph. The sentence is comparing the recycling rate of clothing to that of the other items in the graph. First, look up clothing on the graph and find that its rate is about 15%. Then look up each choice to see whether it’s true, keeping in mind that the underlined part follows the word *only*. The rate for rubber and leather is about 16%, which is higher than that of clothing, but many other materials are also recycled at higher rates than clothing. Since rubber and leather aren’t the only ones with higher rates, eliminate (A). The rate for plastic is 5% and wood is 9%, which is lower than that of clothing, so keep (B). The rate for yard trimmings is 53%, which is higher than that of clothing. Again, it is not the only higher rate, so eliminate (C). The rate for glass is 30%, which is another rate higher than that of clothing, so eliminate (D). It is true that *only* plastics and wood are lower. The correct answer is (B).



6. **C** Transitions change in the answer choices, so the question is testing consistency of ideas. A transition must be consistent with the relationship between the ideas it connects. The sentence begins with *Not only*, which should be followed by *but also*. The correct answer is (C).
7. **A** Transitions change in the answer choices, so the question is testing consistency of ideas. A transition must be consistent with the relationship between the ideas it connects. The previous sentence says that *re-using clothing can also save resources*. The sentence that starts with the underlined transition says that *buying a pair of jeans second-hand saves that water*. The second sentence is similar in idea to the first, so eliminate (B) and (C) because they indicate a change of idea. *Moreover* indicates a new idea that is similar to the first, but the second sentence is a specific example of the general idea in the first sentence; eliminate (D). The correct answer is (A).
8. **D** Commas change in the answer choices, so this question tests comma usage. The sentence does not contain a list, and the phrase *clothing waste by offering 15%-off coupons to consumers who bring unwanted clothing* is a necessary part of the sentence. Therefore, there is no reason to use a comma; eliminate (A) and (C). Vocabulary also changes in the answer choices, so this question also tests precision of word choice. Look for a word with a definition that is consistent with the other ideas in the sentence. *Rain* means “water that falls from clouds;” *rein* means to “control.” The correct answer is (D).
9. **B** Note the question! The question asks for the most effective transition from the previous paragraph, so it tests consistency. Determine the subject of each paragraph and find the answer that is consistent with the relationship between those ideas. The previous paragraph discusses H&M’s desire to reduce clothing waste and the beginning of its plan to collect and recycle unwanted clothing. The paragraph that starts with the underlined portion discusses the specific steps taken to recycle the clothing. The correct answer will connect these two ideas. Introducing *other retailers* does not connect the ideas, so eliminate (A). Introducing the *several steps* of recycling does connect the ideas, so keep (B). Introducing *low-quality fast fashion* does not connect the ideas, so eliminate (C). Introducing *a bigger discount* does not connect the ideas, so eliminate (D). The correct answer is (B).
10. **B** The length of the phrase changes in the answer choices. The underlined portion is part of a list in the sentence, so this question tests consistency. All items in a list must be phrased the same way to be consistent with one another. The other items in the list are *shredded for use as insulation* and *recycled to make fabric for new clothing*. Each item starts with a past tense verb, so eliminate (A), (C), and (D) because they do not start with *repurposed*. The correct answer is (B).
11. **B** Verbs are changing in the answer choices, so the question is testing consistency of verbs. A verb must be consistent with its subject. The subject of the verb is *the technology*, which is singular. To be consistent, the verb in the answer choices must also be singular. Eliminate (A), (C), and (D) because they are plural. The correct answer is (B).
12. **D** Pronouns and apostrophes change in the answer choices, so this question tests consistency of pronouns and apostrophe usage. A pronoun must be consistent in number with the noun it refers to. The underlined pronoun refers to *the people*, which is plural. To be consistent, the underlined pronoun must also be plural. Eliminate (A) and (B) because *it* is singular. *They’re* is a contraction of *they are*, which is not necessary in this sentence; eliminate (C). Choice (D) appropriately uses the possessive pronoun *their*. The correct answer is (D).
13. **C** Note the question! The question asks for the choice that combines the sentences, so it’s testing precision and concision. Select the choice that keeps the intended meaning of the sentences using the fewest words. Consider (C) first because it’s the shortest. The choice ends with *ofrendas*,

followed by a comma, and the non-underlined portion is a modifier that describes the *ofrendas*. This creates a sentence that is both precise and concise. Eliminate (B) and (D) because they both unnecessarily repeat the word *ofrendas*. Eliminate (A) because it is unclear what the phrase *in Spanish* refers to. The correct answer is (C).

14. **A** Commas are changing in the answer choices, so the question is testing comma usage. There is no need to break up the phrase *markets dedicated to the bright skeleton decorations* with a comma. Eliminate (B) and (C). The long dash cannot be followed by *and*, so eliminate (D). No punctuation is necessary. The correct answer is (A).
15. **B** Note the question! The question asks for the explanation of the Aztec tradition, so it's testing consistency. Eliminate any answer choices that are inconsistent with the purpose stated in the question. The first part of the sentence says that *the dead would be offended by mourning*. The correct answer must be consistent with a "tradition" that would not offend the dead. Eliminate (A) because it describes an emotion (*sad*) but not a tradition. Keep (B) because it describes a tradition of *celebration rather than sadness*. Eliminate (C) and (D) because neither knowing *whether an invisible spirit is offended* nor the fact that *the Aztec didn't want to disrespect the wishes of the dead* describes a tradition. The correct answer is (B).
16. **A** The length of the phrase changes in the answer choices. There is a comparison in the sentence, so this question tests consistency. When two things are compared, they should be consistent with each other. The sentence says that *ofrendas...have items*. Thus, the correct answer must be consistent with the "items" on *church altars*. The pronoun *those* could refer to the *items*, so keep (A). Choices (B) and (C) only mention the *altars* and not the *items* on the altars, so eliminate them both. Eliminate (D) because it mentions the *structures* and not the *items*. The correct answer is (A).
17. **A** Note the question! The question asks where sentence 3 should be placed, so it's testing consistency. The sentence must be consistent with the ideas that come both before and after it. Sentence 3 says *During these two days*, so it should be placed after a sentence that references two days. Sentence 2 discusses *November 1–2*, so sentence 3 should be placed after sentence 2. The correct answer is (A).
18. **C** The pronouns are changing in the answer choices, so the question is testing consistency of pronouns. The pronoun must be consistent with the noun it is referring to. The phrase *are best known for their elaborate ofrendas* refers to the *local artists*, so the pronoun should also refer to the artists. Eliminate (A) because *which* refers to things, and not people. The first part of the sentence, *Others are built by local artists*, is an independent clause. In (B), the second part of the sentence, *many are best known for their elaborate ofrendas*, is also an independent clause. A comma alone cannot be used between two independent clauses, so eliminate (B). Keep (C) because *whom* can refer to people, and the second part of the sentence is not an independent clause. Although *them* can refer to people, (D) makes the second part of the sentence an independent clause; eliminate (D). The correct answer is (C).
19. **D** Note the question! The question asks for information *that is most consistent in style and content with the information about why pillows and blankets are included on the altars*, so it's testing consistency. Eliminate any answer choices that are inconsistent with the purpose stated in the question. The sentence includes the phrase *pillows and blankets (which provide a resting spot for the spirits)*, which describes their function or use. *Smells delicious* describes a characteristic but not a function, so eliminate (A). *Pan de muerto* is an example but not a function, so eliminate (B). *Homemade* describes a characteristic but not a function, so eliminate (C). *Provide sustenance* describes a function, so keep (D). The correct answer is (D).



20. **B** Note the question! The question asks for the choice that best concludes the paragraph, so it's testing consistency of ideas. Determine the subject of the paragraph and find the answer that is consistent with that idea. The first sentence of the paragraph says that the celebration of the dead is *similar to preparing for a visit from living relatives*. The remaining sentences discuss the many items placed on the altars. Therefore, a concluding sentence should be consistent with each of those ideas. Claiming that it is *more work* would highlight how the situations are different, not similar; since it's not consistent, eliminate (A). Mentioning both what is *included on an altar* and the similarity to *when they were alive* is consistent, so keep (B). Mentioning the *toys* is consistent with the items on the altars but does not conclude the paragraph by discussing the similarities for *preparing for a visit from living relatives*; eliminate (C). Eliminate (D) for the same reason as (C). The correct answer is (B).
21. **A** The length of the phrase changes in the answer choices, so the question is testing precision and concision. Select the shortest answer with a precise meaning. Keep (A) because it is concise and makes the meaning of the sentence clear. The first sentence in the paragraph states that *Many of the same items that decorate altars are also part of the cemetery vigils*, so there's no need to repeat that idea. Eliminate (B) and (C) because they unnecessarily repeat the comparison between graves and altars. The phrase *that attract spirits with their bright colors* does not play a precise role in the sentence, so eliminate (D). The correct answer is (A).
22. **D** The subject of the phrase changes in the answer choices, so the question is testing precision. The beginning of the sentence (*focusing on the finality of death*) is a modifying phrase that does not have a subject. Therefore, the subject must be placed immediately after the comma. In (A) and (C), it is the *merriment* that is *focusing on the finality of death*; this is not the correct meaning, so eliminate (A) and (C). In (B), it is *life* that is *focusing on the finality of death*; this is not the correct meaning, so eliminate (B). In (D), it is *the people* who are *focusing on the finality of death*, which makes the meaning of the sentence precise. The correct answer is (D).
23. **A** Transitions change in the answer choices, so the question is testing consistency of ideas. A transition must be consistent with the relationship between the ideas it connects. The previous sentence states that the *predictions that the machines would replace human bank tellers...did not immediately come true*. The sentence that starts with the underlined transition states that *the number of human bank tellers also increased*. The second idea supports the first with evidence. *In fact* indicates support, so keep (A). *As a result* indicates an effect of a previous cause, so eliminate (B). *For example* is close, but the second sentence is not a specific example but rather general evidence; eliminate (C). *Therefore* indicates causality, so eliminate (D). The correct answer is (A).
24. **D** The punctuation is changing in the answer choices, so the question is testing how to connect ideas with the appropriate punctuation. There is a list in the sentence. The non-underlined portion of the list is separated by a comma: *provide specific bill denominations, and dispense information*. Therefore, all the items in the list must be separated by commas. Eliminate (A), (B), and (C) because they contain semicolons. The correct answer is (D).
25. **C** Note the question! The question asks for the choice that *best fits with the tone of the rest of passage*, so it tests consistency. Eliminate any answer choices that are inconsistent with the purpose stated in the question. The tone of the passage is somewhat formal, so eliminate any answer choices that are informal or slangy. *Rock solid* is too informal for the passage, so eliminate (A). The underlined word describes how machines handle cash. The word *safer* cannot be used to describe how a machine is *with cash*, so eliminate (D). *Impeccable* means "without fault," while *reliable* means "accurate." There is no discussion in the paragraph of fault or blame, so eliminate (B). Choice (C) is consistent with the paragraph. The correct answer is (C).



26. **D** Note the question! The question asks whether the graph should be added, so it's testing consistency of ideas. The graph should be added only if the information in the graph is consistent with the information in the passage. The passage compares and contrasts the services provided by human tellers and ATMs. The graph shows the income for different groups of people. The information is not consistent, so the graph should not be added; eliminate (A) and (B). The passage does not contrast *tellers and loan officers*, so eliminate (C). The wage data does *distract from the paragraph's focus*. The correct answer is (D).
27. **D** Note the question! The question asks where sentence 3 should be placed, so it's testing consistency. The sentence must be consistent with the ideas that come both before and after it. Sentence 3 says that *They also limit the amount of cash...*, which lists another downside of ATMs. Thus, sentence 3 should follow another sentence about the downside of ATMs. Sentence 5 gives a downside when it states *ATMs are far more vulnerable to theft*. The correct answer is (D).
28. **C** The vocabulary is changing in the answer choices, so the question is testing precision of word choice. *Custom* means "personalized" and *accustomed* means "familiar with" or "used to." *Accustomed* is the appropriate word in this context, so eliminate (A) and (D). Prepositions also change in the answer choices, so this question also tests idioms. The correct answer is (C).
29. **B** Note the question! The question asks for a supporting example for the main idea of the paragraph, so it's testing consistency. Eliminate any answer choices that are inconsistent with the purpose stated in the question. The paragraph as a whole compares and contrasts human tellers, ATMs, and mobile apps. The previous sentence says that *Apps are...beginning to improve upon some banking functions that had largely been taken over by ATMs*, so the underlined portion must be consistent with that idea. The percentage of people using the app is not consistent, so eliminate (A). Comparing the mobile apps to what *ATMs are capable of* is consistent, so keep (B). Stating that mobile apps are *not always designed well* and stating that they are *highly susceptible to theft or fraud* is not consistent with the apps outperforming ATMs, so eliminate (C) and (D). The correct answer is (B).
30. **A** Note the question! The question asks for the most effective combination of the two sentences, so it's testing precision and concision. Select the shortest answer that makes the meaning of the sentence precise. Choice (A) is the shortest answer, and it gives the sentence a precise meaning. Eliminate (C) because it inappropriately connects two independent clauses with a comma. The additional words in (B) and (D) do not make the meaning of the sentence more precise, so eliminate (B) and (D). The correct answer is (A).
31. **D** Nouns change from singular to plural in the answer choices, so this question tests consistency of nouns. A noun must be consistent in number with the other nouns or pronouns in the sentence. The sentence contains the noun *teller windows*, which is plural. To be consistent, the underlined noun must also be plural. Eliminate (A) and (B) because they contain the singular noun *kiosk*. Next, the adjoining phrase is changing, so the question is testing precision of language. The proper idiom is *replacing...with*, so the banks are *replacing* teller windows *with* kiosks; eliminate (C). The correct answer is (D).
32. **B** The length of the phrase changes in the answer choices, so this question tests concision. The non-underlined portion of the sentence states that *employees are...trained to answer questions*. Eliminate (A) because it unnecessarily repeats *trained*, and eliminate (C) because it repeats *answer questions*. The phrase *in addition* means the same thing as *and*, so there is no reason to use both terms; eliminate (D). Choice (B) is concise and gives the sentence a precise meaning. The correct answer is (B).

33. **A** Punctuation changes in the answer choices, so this question tests how to connect ideas with the appropriate punctuation. The first part of the sentence, *So while the old-fashioned notion of a bank teller may be on the way out*, is not an independent clause. The second part of the sentence, *machines are not yet close to replacing human bank employees altogether*, is an independent clause. Periods and semicolons can only be used between two independent clauses, so eliminate (B) and (C). The sentence starts with the contrasting transition *while*, so there is no reason to also use *nevertheless*; eliminate (D). Choice (A) is concise and appropriately uses a comma to connect the two parts of the sentence. The correct answer is (A).
34. **A** Transitions change in the answer choices, so the question is testing consistency of ideas. A transition must be consistent with the relationship between the ideas it connects. The first sentence states that there is *an arms race against bacteria*. Then it says that *Bacteria...develop resistance to antibiotics* and follows with *scientists must continually develop newer, stronger antibiotics*. The second is an effect of the first. *As a result* indicates an effect, so keep (A). *However* and *nevertheless* indicate opposite ideas, so eliminate (B) and (C). Developing new antibiotics is not an *example* of bacterial resistance, so eliminate (D). The correct answer is (A).
35. **C** Note the question! The question asks for the *scientists' goal*, so it's testing consistency. Eliminate any answer choices that are inconsistent with the purpose stated in the question. Earlier in the paragraph it says that *scientists have been engaged in an arms race against bacteria* and that they need to *overcome the resistant bacteria*, so the correct answer must be consistent with "outcompete." *Count the number* is not consistent, so eliminate (A). *Facilitate* means "to help," which is not consistent, so eliminate (B). *Stay ahead of* is consistent, so keep (C). *Shoot at* is too literal of the arms race and is not consistent with "outcompete," so eliminate (D). The correct answer is (C).
36. **D** The length of the phrase changes in the answer choices, so this question tests consistency. There is also the option to DELETE; consider this choice carefully, as it is often correct. The sentence already says *extended trips*, so there's no reason to repeat that idea. Eliminate (A), (B), and (C) because they all repeat the idea of *extended trips*. Choice (D) is concise and gives the sentence a precise meaning. The correct answer is (D).
37. **A** Verbs are changing in the answer choices, so the question is testing consistency of verbs. A verb must be consistent with its subject and with the other verbs in the sentence. The subject of the verb is *pathogens*, which is plural. To be consistent, the underlined verbs must also be plural. *Becomes* is singular, so eliminate (C) and (D). The non-underlined verb in the phrase *were surprised* is past tense, so the correct answer should also be in the past tense. *Mutated* and *became* are past tense, so keep (A). *Had mutated* and *had become* are the past perfect tense, but the non-underlined verb does not contain *had*. Eliminate (B) because it's not consistent with the sentence. The correct answer is (A).
38. **C** The order of the phrases is changing in the answer choices, so the question is testing precision. Note that the underlined portion is followed by a descriptive phrase set off by parentheses. The descriptive phrase must be adjacent to the thing it describes. The parenthetical phrase, *the friction between cells and the fluids they interact with*, cannot describe a *reduction*, so eliminate (A). It also does not accurately describe *microgravity*, so eliminate (B). The phrase could accurately describe *fluid shear stress*, so keep (C). The phrase cannot describe *fluid*, so eliminate (D). The correct answer is (C).
39. **B** Note the question! It asks whether a phrase should be added, so it's testing consistency and concision. The phrase should be added only if the information is consistent with the information in the passage and makes the meaning of the sentence more precise. The first part of the sentence states how scientists believe microgravity will affect *bacteria inside the human body*. The new

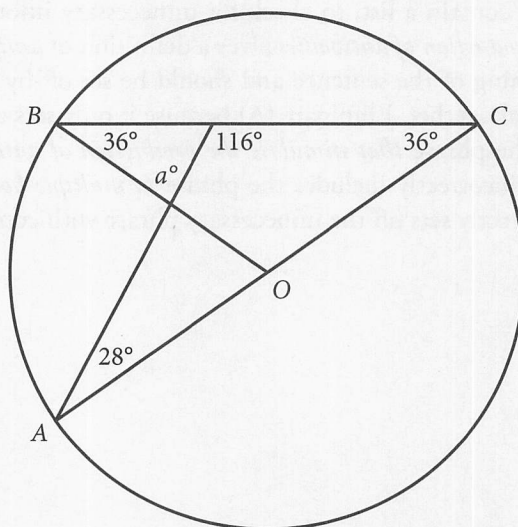
phrase says that studying this allows for *a glimpse into how that pathogen behaves in the human digestive tract*. The idea is consistent with the sentence, so it should be added. Eliminate (C) and (D). Eliminate (A) because the new phrase does not *make it clear that researchers cannot actually see inside the human digestive tract*. Choice (B) accurately states that the new phrase *further explains the benefits of conducting bacteria studies in space*. The correct answer is (B).

40. **C** Note the question! It asks for *the most precise description of the proceeding depicted in the first part of the sentence*, so it's testing precision of word choice. The first part of the sentence discusses the *studies*, so the correct answer should match that idea. *Subject* could mean "ideas" or "participants." Neither matches *studies*, so eliminate (A). *Examinations* means "inspections," so eliminate (B). *Experiments* means "studies" or "acts of discovery," so keep (C). *Tests* means "methods to assess," so eliminate (D). The correct answer is (C).
41. **B** Verbs are changing in the answer choices, so the question is testing consistency of verbs. A verb must be consistent with its subject and with the other verbs in the sentence. The subject of the verb is *they*, which is plural. Since all the answers are plural, check the other verbs. The other verbs in the sentence are *are looking* and *attack*, which are present tense. Choices (A), (C), and (D) are past tense, so eliminate them. The correct answer is (B).
42. **B** Commas are changing in the answer choices, so the question is testing comma usage. There is no need to break up the phrase *one of the leading causes of food-borne illness in the United States*, so eliminate (A), (C), and (D). No commas are necessary. The correct answer is (B).
43. **A** Note the question! The question asks for the most effective transition, so it's testing consistency of ideas. Determine how the ideas before and after the sentence relate to each other and select the appropriate transition. The previous sentences discuss the need for *developing a vaccine for Salmonella*. The following sentences discuss using *Salmonella as a delivery vehicle* for another vaccine. The correct transition will shift from needing a vaccine to cure *Salmonella* to using *Salmonella* as a vaccine to cure some other illness. *Salmonella...playing an important role in vaccine research...in an unexpected way* connects the two ideas, so keep (A). Stating that *a vaccine hasn't yet been developed* does not connect to the second part, so eliminate (B). Wanting to *develop better vaccines against...other illnesses* connects to the second part, but doesn't mention *Salmonella*, so eliminate (C). *Studies...beyond the International Space Station* do not connect the ideas, so eliminate (D). The correct answer is (A).
44. **B** Commas are changing in the answer choices, so the question is testing comma usage. The sentence does not contain a list, so check for unnecessary information. The phrase *substances that stimulate the production of antibodies* gives a definition of *antigens*. The phrase is not necessary to the main meaning of the sentence and should be set off by commas. Eliminate (D) because it lacks commas altogether. Eliminate (A) because it only sets off the word *substances*, which incorrectly makes the phrase *that stimulate the production of antibodies* describe *antigens*. Eliminate (C) because it incorrectly includes the phrase *to multiple body parts* in the unnecessary phrase. Choice (B) correctly sets off the unnecessary phrase with commas. The correct answer is (B).



### Section 3: Math (No Calculator)

- C** The question asks for an equation that represents a graph. To find the best equation, compare features of the graph to the answer choices. The graph for this question has a  $y$ -intercept of 7 and a negative slope. Eliminate answer choices that do not match this information. All the choices are already in  $y = mx + b$  form, in which  $m$  is the slope and  $b$  is the  $y$ -intercept. Choices (A) and (B) have  $y$ -intercepts of 0; eliminate (A) and (B). The difference between (C) and (D) is the slope, so calculate slope using the formula  $\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$ . The graph goes through the points (0, 7) and (7, 0), so  $\text{slope} = \frac{0 - 7}{7 - 0}$ , which is  $-\frac{7}{7}$  or  $-1$ . Eliminate (D). The correct answer is (C).
- D** The question asks for an equation in terms of a specific variable. To begin to isolate  $B$ , start by multiplying both sides by 5 to get  $2A + B + 2C = 5D$ . Next, subtract  $2A$  and  $2C$  from both sides to get  $B = 5D - 2A - 2C$ . The correct answer is (D).
- A** The question asks for the value of  $a$ . To begin to isolate  $a$ , combine like terms on both sides of the equation to get  $2a - 9 = 7a - 4$ . Next, subtract  $2a$  from both sides to get  $-9 = 5a - 4$ . Add 4 to both sides to get  $-5 = 5a$ . Divide both sides to get  $-1 = a$ . The correct answer is (A).
- D** The question asks for the value of a variable in a system of inequalities. There are variables in the answer choices, so try out some values for them. Find a value of  $y$  that works in the first equation, such as  $y = 2$ . Plug this in to the second inequality to get  $x < 3(2) + 4$ , which is  $x < 10$ . Use this inequality to find a value for  $x$ . Make  $x = 9$ . Next, plug in this value for  $x$  into each answer choice and eliminate any choice that is not true when  $x = 9$ . Choice (A) becomes  $9 < \frac{7}{3}$ . This is false; eliminate (A). Choice (B) becomes  $9 < 3$ ; eliminate (B). Choice (C) becomes  $9 < \frac{19}{3}$ ; eliminate (C). Choice (D) becomes  $9 < 11$ ; keep (D). The correct answer is (D).
- B** The question asks for the value of an angle on a figure. Start by labeling the figure with the given information. Because  $O$  is the center of the circle,  $BO$  and  $CO$  are both radii, so  $BO = CO$ , and triangle  $BOC$  is an isosceles triangle. Therefore, angle  $CBO$  is also equal to  $36^\circ$ ; mark this in the figure. The angles in a triangle add up to  $180^\circ$ , so the third angle in the triangle with angles  $28^\circ$  and  $36^\circ$  must equal  $180 - 28 - 36 = 116^\circ$ . Label this angle in the diagram:



A straight angle has  $180^\circ$ , so the angle adjacent to the  $116^\circ$  angle must be  $180 - 116 = 64^\circ$ ; label this in the diagram. Finally, the triangle containing the angle with measure  $a^\circ$  has  $180^\circ$ , so  $a$  must be  $180 - 36 - 64 = 80^\circ$ . The correct answer is (B).

6. **C** The question asks for the perimeter of the traffic island. Start by drawing an isosceles triangle. Next, label the figure. Because there are variables for the side lengths, pick a value for  $s$ . Make  $s = 6$ . Label the two equal sides as having a length of 6. The third side is *4 meters shorter than the equal sides*, so the third side must be  $6 - 4 = 2$  meters. Label that side. The perimeter is the sum of the sides:  $6 + 6 + 2 = 14$ . This is the target value; circle it. Next, make  $s = 6$  in each answer and eliminate any answer that does not equal the target value. Choice (A) becomes  $2(6) - 4$ , which is  $12 - 4$  or 8. This does not equal the target value; eliminate (A). Choice (B) becomes  $\frac{(6)^2 - 4(6)}{2}$ , which is  $\frac{36 - 24}{2}$  or  $\frac{12}{2}$ , which is 6. Eliminate (B). Choice (C) becomes  $3(6) - 4$ , which is  $18 - 4$  or 14. Keep (C), but check (D) just in case. Choice (D) becomes  $\frac{6 - 4}{2}$ , which is  $\frac{2}{2}$  or 1. Eliminate (D). The correct answer is (C).
7. **D** The question asks for the equation of a circle given the endpoints of the diameter. The equation of a circle in standard form is  $(x - h)^2 + (y - k)^2 = r^2$ , where  $(h, k)$  is the center and  $r$  is the radius. Since the endpoints have the same  $x$ -coordinate, the length of the diameter is the difference in the  $y$ -coordinates. Therefore, the diameter is  $7 - 1 = 6$ , and the radius is 3. This means that  $r^2 = 9$ . Eliminate (B) and (C), which have  $r^2 = 36$ . Be careful of sign changes with the coordinates of the center of the circle. In this circle equation,  $h$  is  $-11$ , so the first part of the equation is  $[x - (-11)]^2$ , or  $(x + 11)^2$ . Eliminate (A). The correct answer is (D).
8. **C** The question asks for the solution set of the equation. Rather than doing complicated algebraic manipulations, try out the numbers in the answers. Begin by labeling the answers as  $a$  and start with (B). If  $a = 1$ , the equation becomes  $1 - 6 = \sqrt{8(1) - 7} - 4$ , which is  $-5 = \sqrt{1} - 4$  or  $-5 = -3$ . This is false; eliminate (B) and (D) because both answers include 1. There must be a positive number or 0 under the square root; eliminate (A) because if  $a = 0$ , there would be a negative number under the radical. Only one choice remains, but test it to be sure. If  $a = 11$ , then the equation becomes  $11 - 6 = \sqrt{8(11) - 7} - 4$ , which is  $5 = \sqrt{81} - 4$  or  $5 = 9 - 4$ . This is true. The correct answer is (C).
9. **A** The question asks for an equivalent form of an expression when one function is divided by another. Rather than doing complicated algebraic manipulations, pick a number to use in the functions. Make  $a = 5$ . The first function becomes  $h(5) = 5^2 + 5 - 20 = 25 + 5 - 20 = 10$ . The second function becomes  $k(5) = 5^3 - 16(5) = 125 - 80 = 45$ . The question asks for  $\frac{h(a)}{k(a)}$ , so plug these values in to get  $\frac{10}{45}$ . This is the target value; circle it. Now plug  $a = 5$  into the answer choices to see which one matches the target value. Choice (A) becomes  $\frac{5 + 5}{5(5 + 4)} = \frac{10}{5(9)} = \frac{10}{45}$ . This matches the target, so keep (A) but check the remaining answers just in case. Choice (B)

becomes  $\frac{5+5}{5(5-4)} = \frac{10}{5(1)} = \frac{10}{5}$ . Eliminate (B). Choice (C) becomes  $\frac{5+5}{5+4} = \frac{10}{9}$ . Eliminate (C). Choice (D) becomes  $5+5 = 10$ . Eliminate (D). The correct answer is (A).

10. **C** The question asks for an equation that represents a graph. One option would be to pick a point that is on the graph and plug it into the answer choices to see which ones are true. The answers are all in factored form, however, which shows the roots or solutions of a function. If  $(x - a)$  is a factor of a polynomial, then  $a$  is a solution, and the graph will cross the  $x$ -axis at  $a$ . This graph crosses the  $x$ -axis at  $-2$ ,  $0$ , and  $1$ , so the factors must include  $(x + 2)$ ,  $x$ , and  $(x - 1)$ . Eliminate (B) and (D) because they do not contain these factors. Compare the remaining answers, (A) and (C). They have the same factors, so plugging in the points will result in true statements for both. Instead, pick an  $x$ -value that is not a root, such as  $x = -1$ . The exact  $y$ -value is not clear, but it must be positive. Choice (A) becomes  $y = -(-1)(-1 - 1)(-1 + 2)$  or  $y = 1(-2)(1)$ . This becomes  $y = -2$ , which does not match the graph. Eliminate (A). The correct answer is (C).
11. **A** The question asks for the value of an expression given an equation. Because the question includes a relationship between the variables without providing actual values, select values to use. Start by plugging in for  $y$  and solving for  $x$  in the first equation. Make  $y = 2$ . The equation becomes  $\frac{x}{3(2)} = 3$ , which is  $\frac{x}{6} = 3$ . Multiply both sides by  $6$  to get  $x = 18$ . Next, plug  $y = 2$  and  $x = 18$  into  $\frac{y}{x}$  to get  $\frac{2}{18}$ , which is  $\frac{1}{9}$ . The correct answer is (A).
12. **B** The question asks for the number of jars that hold 3 tomatoes. Rather than creating a system of equations, use the numbers in the answer choices. Begin by labeling the answers as “jars with 3 tomatoes” and start with (B), 52. If 52 jars hold 3 tomatoes each, then these jars hold a total of  $52 \times 3 = 156$  tomatoes. Because there are 80 jars, there are  $80 - 52 = 28$  jars that hold 5 tomatoes each, for a total of  $28 \times 5 = 140$  tomatoes in these jars. This gives a total of  $156 + 140 = 296$  tomatoes, which matches the value given in the question, so stop here. The correct answer is (B).
13. **A** The question asks for the value of a function. In function notation, the number inside the parentheses is the  $x$ -value that goes into the function, and the value that comes out of the function is the  $y$ -value. Plug  $x = 0$  into the  $f$  function to get  $f(0) = 2 - [g(0)]^2$ . Now plug  $x = 0$  into the  $g$  function to get  $g(0) = 3(0) - 3 = 0 - 3 = -3$ . Plug this value into the  $f$  function for  $g(0)$  to get  $f(0) = 2 - [-3]^2 = 2 - (9) = -7$ . The correct answer is (A).
14. **B** The question asks for an equation that models a specific situation. Translate the question one piece at a time and eliminate after each piece. One piece of information says that the population of Bulgaria is decreasing. This will translate to a negative slope, so eliminate (C) and (D), which have positive slopes. Compare the remaining answers. The difference between (A) and (B) is the slope, so calculate slope using the formula  $\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$ . The question states that the population was approximately 9 million people in 1989 and 7.4 million people in 2011. Because  $x$  is years after the year 1989 and  $P(x)$  is in millions of people, the points are  $(0, 9)$  and  $(22, 7.4)$ . Use the slope formula to get  $\text{slope} = \frac{7.4 - 9}{22 - 0}$ , which is  $-\frac{1.6}{22}$ . Both answers have slopes with a denominator of 220, so multiply by  $\frac{10}{10}$  to get a slope of  $-\frac{16}{220}$ . The correct answer is (B).



15. **B** The question asks for the value of  $k$  in the system of equations. Rather than doing complicated algebraic manipulation, use the numbers in the answer choices. With two equations, it may be hard to tell if a value that doesn't work is too big or too small, so start with any of the answers. Since 0 is an easy number to work with, start with (B). If  $k = 0$ , the first equation becomes  $y = x^2 + 2x + 0$  or  $y = x^2 + 2x$ . The second equation states that  $y = 2x$ , so the right sides of the two equations can be set equal to get  $2x = x^2 + 2x$ . Subtract  $2x$  from both sides to get  $x^2 = 0$ . Take the square root of both sides to get  $x = 0$ . There is only one solution when  $k = 0$ . The correct answer is (B).
16. **17** The question asks for the sum of  $y$  and  $z$ , which are two of the coefficients in the expression  $xa^2 + ya + z$ . This expression comes from subtracting the first polynomial ( $a^2 + 2a + 4$ ) from the second polynomial ( $3a^2 - 4a + 27$ ), so the resulting expression is  $(3a^2 - 4a + 27) - (a^2 + 2a + 4)$ . Work one piece at a time. It is unnecessary to know what  $x$  is to solve the question, so ignore the  $a^2$  terms. Subtracting the  $a$  terms gives  $-4a - 2a = -6a$ , so  $y = -6$ . Subtracting the constants gives  $27 - 4 = 23$ , so  $z = 23$ . Therefore,  $y + z = -6 + 23$ , which is 17. The correct answer is 17.
17. **6** The question asks for the positive solution of a quadratic. When given a quadratic in standard form, which is  $ax^2 + bx + c$ , it is often necessary to factor it to solve the question. Find two numbers that add to  $-1$  and multiply to  $-30$ . These are  $-6$  and  $5$ . Therefore, the equation factors to  $(n - 6)(n + 5) = 0$ . Set each factor equal to 0 and solve to find the solutions. If  $n - 6 = 0$ , then  $n = 6$ . If  $n + 5 = 0$ , then  $n = -5$ . The question asks for the positive solution, so  $n = 6$ . The correct answer is 6.
18. **3** The question asks for the value of a variable in the context of a model. In the form  $y = mx + b$ ,  $m$  is the slope and  $b$  is the  $y$ -intercept. Therefore, this question asks for the slope of the equation, so calculate slope using the formula  $\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$ . The question states that *at the start of the month she has completed 12 assignments* and  $x$  is *the number of weeks since the start of the month*, so when  $x = 0$ ,  $y = 12$ . Additionally, the question states that *she completes 3 assignments per week*, so when  $x = 1$ ,  $y = 12 + 3$ , or 15. Therefore, two points are  $(0, 12)$  and  $(1, 15)$ . The slope formula gives  $\text{slope} = \frac{15 - 12}{1 - 0}$ , which is  $\frac{3}{1}$  or 3. The correct answer is 3.
19. **22** The question asks for the area of a sector of the circle. The parts of a circle have a proportional relationship, so the fraction of the degrees in the shaded region is the same as the fraction of the sector area out of the total area. Set up the proportion  $\frac{\text{degrees}}{360} = \frac{\text{sector area}}{\text{total area}}$ , then plug in the given information to get  $\frac{110}{360} = \frac{\text{sector area}}{72}$ . Since calculator use is not allowed, reduce the fraction on the left to  $\frac{11}{36}$  before cross-multiplying to get  $11(72) = 36(\text{sector area})$ . Rather than doing the awkward multiplication on the left, divide both sides by 36 first to get  $11(2) = \text{sector area}$ . Therefore, the shaded region has an area of 22. The correct answer is 22.

20.  $\frac{14}{8}$ ,  $\frac{7}{4}$ , or 1.75

The question asks for the value of a variable given a system of equations. Try to make the other variable disappear. Because the unwanted variable has the same coefficient in both equations, multiply the second equation by  $-1$  to get opposite signs on the  $y$  terms. The second equation becomes  $-x - 2y = -3.75$ , then stack and add the equations.

$$\begin{array}{r} 9x + 2y = 17.75 \\ -x - 2y = -3.75 \\ \hline 8x = 14 \end{array}$$

Divide both sides by 8 to get  $x = \frac{14}{8}$ . Since this answer fits in the grid, there is no need to reduce.

The correct answer is  $\frac{14}{8}$ ,  $\frac{7}{4}$ , or 1.75.

## Section 4: Math (Calculator)

- B** The question asks for the year when the number of tenants in the building increased the fastest. Use Ballparking and estimation to eliminate incorrect answers. The graph represents the total number of tenants on the  $y$ -axis and years on the  $x$ -axis. For the number of tenants to increase the fastest, the line should have a great positive slope. In 2005 and 2007, the slope is negative; eliminate (A) and (C). In 2006, the slope of the line is steeper than in 2009; eliminate (D). The correct answer is (B).
- D** The question asks about population based on information about a study of a sample from that population. Since the residents were randomly selected, the incidence of the gene mutation found in the study should match that of the larger population. To extrapolate the study results, set up a proportion. In this case, the proportion is based on the number of mutations out of the total of each group:  $\frac{4}{500} = \frac{x}{15,000}$ . Cross-multiply to get  $500x = 60,000$ . Divide both sides by 500 to get  $x = 120$ . The correct answer is (D).
- C** The question asks for an algebraic expression to represent a situation. Rather than creating an algebraic equation, pick a number for  $n$ . Make  $n = 2$ . If each box of cookies costs \$2, then 4 boxes of cookies will cost  $\$2 \times 4 = \$8$ . This is the target value; circle it. Now plug  $n = 2$  into the answer choices to see which one matches the target value. Choice (A) becomes  $\frac{2}{4}$ , which reduces to  $\frac{1}{2}$ . This does not match the target, so eliminate (A). Choice (B) becomes  $\frac{4}{2}$ , which reduces to 2. Eliminate (B). Choice (C) becomes  $4(2) = 8$ . Keep (C), but check (D) just in case. Choice (D) becomes  $2 + 4 = 6$ . Eliminate (D). The correct answer is (C).
- A** The question asks for the value of an angle on a figure. Start by labeling the figure with the given information. Mark lines  $l_1$  and  $l_2$  as parallel and the angle marked  $a^\circ$  as 110. It may not be immediately obvious how to get the value of  $b$ , so see what else can be determined. There are  $180^\circ$  in a triangle, so the angle to the right of  $a$  is  $180 - 110 - 30 = 40^\circ$ . When two parallel lines like  $l_1$  and  $l_2$  are cut by a third line, like the one to the right of the  $40^\circ$  angle and the angle marked

$b^\circ$ , two kinds of angles are created: big and small. All small angles are equal, and both of these angles are small angles. Therefore,  $b = 40$ . The correct answer is (A).

5. **B** The question asks for a system of equations that models a specific situation. Translate the question one piece at a time and eliminate after each piece. One piece of information says that the total number of digital and paper subscriptions was 1,800, so one of the equations must be  $d + p = 1,800$ . Eliminate (C), which does not contain this equation. Compare the remaining answer choices. All are equal to 20,760, which is the total revenue from the sale of subscriptions. Find the other information related to money. Digital subscriptions cost \$8, so  $8d$  must be part of the equation. This does not appear in (A), so eliminate it. The revenue from the digital subscriptions must be added to the revenue from the paper subscriptions to get the total revenue, but (D) multiplies the values. Eliminate (D). The correct answer is (B).
6. **A** The question asks for the predicted value given a graph. This specific value will be based on the line of best fit, but the maximum heart rate of a 60-year-old runner is not on the graph. Use either the equation or the graph of the line of best fit to determine the value. In the equation, the  $x$ -value is the age and the  $y$ -value is the heart rate. The equation becomes  $y = -0.84(60) + 216.9$  or  $y = -50.4 + 216.9 = 166.5$ . To use the graph instead, continue the line of best fit off the right side of the graph a bit, then estimate where an age of 60 years would fall along the horizontal axis. From this point, trace up to find the intersection with the line of best fit, using the answer sheet as a straight edge if necessary. It is between the horizontal gridlines for 160 and 170 on the maximum heart rate axis. Only the value in (A) falls between 160 and 170. The correct answer is (A).
7. **C** The question asks for the value of  $c - 2$  in the given equation. Rather than doing algebraic manipulation, use the numbers in the answer choices. Begin by labeling the answers as “ $c - 2$ ” and start with (B), 3. If  $c - 2 = 3$ , then the equation becomes  $\frac{3}{3} = 3$  or  $1 = 3$ . This is not true, so eliminate (B). A smaller value of  $c - 2$  is needed to make the two sides of the equation closer to the same value, so try (C) next. If  $c - 2 = \sqrt{3}$ , the equation becomes  $\frac{3}{\sqrt{3}} = \sqrt{3}$ . Multiply both sides by  $\sqrt{3}$  to get  $3 = \sqrt{3} \times \sqrt{3}$  or  $3 = 3$ . This is true. The correct answer is (C).
8. **B** The question asks for an equation with a  $y$ -intercept of  $-1$ . To find the equation, look for the  $y$ -intercept in each answer choice. Each answer choice is already in slope-intercept form:  $y = mx + b$ , where  $m$  represents the slope and  $b$  represents the  $y$ -intercept. Therefore, the correct answer must have a  $b$  term of  $-1$ . Choices (A), (C), and (D) have  $y$ -intercepts of  $-\frac{1}{2}$ , 0, and 1, respectively; eliminate them. The correct answer is (B).
9. **D** The question asks for a system of inequalities that models a specific situation. Translate the question one piece at a time and eliminate after each piece. One piece of information says that Sarah purchases *more than 360 items*. The items she purchases are canvases ( $a$ ) and paint bottles ( $b$ ), so one inequality must be  $a + b > 360$ . Eliminate (B) and (C) because they do not contain this inequality. Compare the remaining answer choices. The difference between (A) and (D) is which way the inequality sign is pointing. The question states that Sarah *goes over-budget*, so she spent more than \$1,700. The expression on the left is therefore greater than the cost. This does not fit (A), so eliminate it. The correct answer is (D).



10. **C** The question asks for the number of beakers needed to hold 4 liters of solution. The note after the question indicates that 1 liter is equivalent to 1,000 milliliters. Therefore, 4 liters is equivalent to  $4(1,000) = 4,000$  milliliters. Divide this by the amount each beaker can hold, which is 800 milliliters, to get  $4,000 \div 800 = 5$ . The correct answer is (C).
11. **A** The question asks for the radius of the beaker, in inches. Rather than doing algebraic manipulation, use the numbers in the answer choices. Begin by labeling the answers as “radius” and start with (B), 2.28 inches. If  $n = 2.28$ , the volume becomes  $\frac{21\pi(2.28)^3}{12} \approx \frac{21\pi(11.85)}{12} \approx \frac{782}{12} \approx 65$  cubic inches. The question states that the volume of 800 milliliters is 13.2 cubic inches, so this is much too large. Eliminate (B), (C), and (D). The correct answer is (A).
12. **A** The question asks for the graph that models a specific situation. To find the best graph, read the question carefully and compare features of the graphs in the answer choices, then use Process of Elimination. The question states that the beaker was full of a solution which then evaporated over time. Therefore, the height of the solution in the beaker must be decreasing. Choice (C) shows a constant height over time. Eliminate (C). Choice (D) shows a linear decrease over time. Although the solution evaporates at a constant rate, the odd shape of the beaker would make the height of the solution change in a non-linear way. Eliminate (D). Since the beaker is narrower at the top, the height of the solution will decrease quickly at first then more slowly near the wide base of the beaker. Eliminate (B), which shows the height decreasing more quickly near the end of the evaporation period. The correct answer is (A).
13. **A** The question asks for the power rating of a machine given that power is work per unit time. Set up the power equation:  $\text{power} = \frac{\text{work}}{\text{time}}$ . Now find the information about work and time. Work is defined as *the product of the mass of the object, in kilograms; the distance the object moves, in meters; and the gravitational constant of 9.8 meters per second squared*. Put this into the power formula to get  $\text{power} = \frac{(\text{mass})(\text{distance})\left(9.8 \frac{\text{m}}{\text{s}^2}\right)}{\text{time}}$ . The time is given as 18 seconds, the mass as 100 kilograms, and the distance as 3.6 meters. Plug these values into the formula to get  $\frac{(100 \text{ kg})(3.6 \text{ m})\left(9.8 \frac{\text{m}}{\text{s}^2}\right)}{18 \text{ s}}$   
 $= \frac{3,528}{18} = 196$ . The correct answer is (A).
14. **B** The question asks for one variable in terms of another. Rather than doing algebraic manipulation, pick a number for  $x$ . Make  $x = 2$ . This is the target value; circle it. Use this to find the value of  $y$ :  $y = \frac{1}{2^3} = \frac{1}{8}$ . Now plug  $y = \frac{1}{8}$  into the answer choices to see which one matches the target value. Use a calculator if needed to find the values. Choice (A) becomes  $\left(\frac{1}{8}\right)^{\frac{1}{3}} = \sqrt[3]{\frac{1}{8}} = \frac{1}{2}$ . This does not match the target value, so eliminate (A). A negative exponent flips the base to its reciprocal, so (B) becomes  $\left(\frac{1}{8}\right)^{-\frac{1}{3}} = (8)^{\frac{1}{3}} = \sqrt[3]{8} = 2$ . Keep (B), but check the remaining answer choices

- just in case. Choice (C) becomes  $-\left(\frac{1}{8}\right)^3 = -\left(\frac{1}{512}\right)$ , and (D) becomes  $\left(\frac{1}{8}\right)^3 = \left(\frac{1}{512}\right)$ . Eliminate (C) and (D). The correct answer is (B).
15. **C** The question asks for the value of  $x$  that is not in the domain of  $f(x)$ , which is a value of  $x$  that does not work in the equation. Rather than doing algebraic manipulation, use the numbers in the answer choices. Begin by labeling the answers as  $x$  and start with (B), 0. If  $x = 0$ , the function becomes  $f(0) = \frac{5}{0^2 - 5(0) + 4}$ , which is  $\frac{5}{4}$ . This is a value for  $f(x)$  that works, so  $x = 0$  is in the domain of  $f(x)$ ; eliminate (B). It can be tricky to determine whether a larger or smaller number is needed when working with quadratics, so just pick a direction. Try (C). If  $x = 1$ , the function becomes  $f(1) = \frac{5}{1^2 - 5(1) + 4}$ , which is  $\frac{5}{1 - 5 + 4}$  or  $\frac{5}{0}$ . This is undefined, so  $x = 1$  must not be in the domain of  $f(x)$ . The correct answer is (C).
16. **B** The question asks about the mean, median, and mode of a set of data. For averages, use the formula  $T = AN$ , in which  $T$  is the total,  $A$  is the average, and  $N$  is the number of things. The number of things is 24, since the farmer took the total for each of the 24 chickens for the week. To find the total, take each number of eggs times the frequency for that number, then add all the results together. The total is  $8(1) + 7(3) + 6(8) + 5(5) + 4(2) + 2(5) = 8 + 21 + 48 + 25 + 8 + 10 = 120$ . Therefore, the formula becomes  $120 = A(24)$ , and  $A = 5$ . The median of a list of numbers is the middle number when all values are arranged in order. In lists with an even number of items, the median is the average of the middle two numbers. There are 24 chickens, so the median number of eggs will be the average of the eggs laid by the 12th and 13th chickens. The number of eggs are already listed in order, so start counting from the 1st chicken, which laid 8 eggs. The 2nd, 3rd, and 4th chickens laid 7 eggs each. The next 8 chickens, the 5th through the 12th, laid 6 eggs and the 13th chicken laid 5 eggs. Therefore, the median number of eggs is  $\frac{6+5}{2} = 5.5$ . This is greater than the mean, so eliminate (A) and (D). Now find the mode, which is the most common number in a set of data. In this set, the number of eggs with the highest frequency is 6, so the mode is 6. This is also greater than the mean, so eliminate (C). The correct answer is (B).
17. **B** The question asks for a certain value on a graph. *Hours* are listed along the horizontal axis, so find 12 on that axis. From this point, trace up to find the intersection with the line of best fit, using the answer sheet as a straight edge if necessary. It is between the horizontal gridlines for 70% and 80% on the *Job Satisfaction* axis. Only the value in (B) falls between 70% and 80%. The correct answer is (B).
18. **A** The question asks for a proportion, which is defined as  $\frac{\text{part}}{\text{whole}}$ . Read the table carefully to find the numbers to make the proportion. There were 250 participants who watched the new ad, so that is the *whole*. Of these participants, 120 had a favorable opinion, so that is the *part*. Therefore, the proportion is  $\frac{120}{250} = \frac{12}{25}$ . The correct answer is (A).

19. **B** The question asks for a percent decrease based on data. Percent change is defined as  $\frac{\text{difference}}{\text{original}} \times 100$ . Set it up, then find the numbers on the table. The question asks for the percent decrease... from January 1<sup>st</sup>, 2010, to January 1<sup>st</sup>, 2011. The graph lists time as *Months since January 1<sup>st</sup>, 2008*. There are two years or 24 months from January 1<sup>st</sup>, 2008 to January 1<sup>st</sup>, 2010, so the crime rate for January 1<sup>st</sup>, 2010 is at 24 months on the horizontal axis. From this point, trace up to find the intersection with the line of best fit, using the answer sheet as a straight edge if necessary. It is at a crime rate of 1,000. There is one more year, or an additional 12 months, between January 1<sup>st</sup>, 2010 and January 1<sup>st</sup>, 2011, so the crime rate for January 1<sup>st</sup>, 2011 is at 36 months on the vertical axis. This intersects the line of best fit at a crime rate of 800. Therefore, the percent decrease is  $\frac{1,000 - 800}{1,000} \times 100 = \frac{200}{1,000} \times 100 = 0.2 \times 100 = 20\%$ . The correct answer is (B).
20. **C** The question asks for the meaning of a coefficient in context. Start by reading the full question, which asks for the meaning of the number 16.8. Then label the parts of the equation with the information given. The question states that  $y$  is the violent crime rate in the city and  $x$  is the number of months since the crime prevention program began. The number 16.8 is multiplied by months and subtracted from 1,412, so it must have something to do with the decrease in the crime rate over time. Next, use Process of Elimination to get rid of answer choices that are not consistent with the labels. Choice (A) refers to the number of months, but  $x$  represents time in the equation, so eliminate (A). Choice (B) refers to the average crime rate, but  $y$  represents the crime rate in the equation, so eliminate (B) also. Choice (C) refers to a *reduction* in the crime rate over time, so keep (C). Choice (D) refers to the exact crime rate in 2008, when the program began. To check this, plug in  $x = 0$ . The equation becomes  $y = 1,412 - 16.8(0) = 1,412 - 0 = 1,412$ . Therefore, the crime rate at the start of the program in January 2008 was 1,412. Eliminate (D). The correct answer is (C).
21. **A** The question asks for an inequality that models a specific situation. Translate the question one piece at a time and eliminate after each piece. One piece of information says that Samuel's salary will increase from \$49,500 to \$64,500 once he completes the MBA program. Therefore, the *additional income* each year will be  $(64,500 - 49,500)$ , so eliminate (C) and (D), which do not include this term. Compare the remaining answer choices. The difference between (A) and (B) is the direction of the inequality symbol. The question states that the *total additional income* should *exceed the cost of tuition*. Therefore, the additional income per year times the number of years will be greater than the tuition. This translates to  $(64,500 - 49,500)n > 73,320$ . The answer choices isolate  $n$ , so divide both sides by  $(64,500 - 49,500)$  to get  $n > \frac{73,320}{(64,500 - 49,500)}$ . The correct answer is (A).
22. **C** The question asks for the graph of a function given a description of that function. The *zeros* of a polynomial are the points where it crosses the  $x$ -axis, or where  $y = 0$ . Therefore, the graph of this polynomial will contain the points  $(-4, 0)$  and  $(2, 0)$ . Look at the graphs and eliminate any that do not include these points. Choice (A) has zeros at  $(-4, 0)$ ,  $(-1, 0)$ , and  $(2, 0)$ . Choice (A) also has a third zero not mentioned in the question, so check the remaining answers. Choice (B) has zeros at  $(-4, 0)$  and  $(2, 0)$ . Keep (B) as well. Choice (C) has zeros at  $(-4, 0)$  and  $(2, 0)$ . Keep (C) as well. Choice (D) has zeros at  $(-2, 0)$  and  $(4, 0)$ . Eliminate (D). The question also states that the graph should only contain values for  $y$  that are greater than or equal to  $-3$ . Choices (A) and (B) contain values of  $y$  less than  $-3$ . Eliminate (A) and (B). The correct answer is (C).



23. **C** The question asks for a statement that is supported based on the results of a poll that was conducted. Read each answer carefully and use Process of Elimination. Choice (A) refers to high voter turnout on Election Day. It is impossible to know whether additional voters will be for or against the proposition, since only one poll was conducted. Furthermore, no information is given regarding the number of people polled or how they were selected. The poll sample may be too small or too biased to draw conclusions about the larger population. Eliminate (A). Choice (B) refers to the ages of voters. No information was given about the ages of the poll participants, so no conclusion can be drawn about voters based on age. Eliminate (B). Choice (C) refers to the method in which the poll participants were reached. This applies directly to the poll, so it could contain a reasonable conclusion. The percent of participants contacted by cell phone who supported the proposition was 30%, whereas 55% of all participants contacted by landline supported it. Since the percent is higher for landline participants, (C) is true. Keep it, but check (D) just in case. Choice (D) refers to only the landline users, but it has the same problem as (A) in that no information is given to determine if these participants make up a representative sample. Eliminate (D). The correct answer is (C).
24. **D** The question asks for an equation that models a specific situation. There are variables in the answer choices, so plug in. Make  $n = 14$  days in the original equation, so  $x = 2$  weeks in the answer choices. The original equation becomes  $w = 109(1.12)^{14} \approx 109(4.887) \approx 532.7$ . This is the target value; circle it. Now plug  $x = 2$  into the answer choices to see which one matches the target value. Choice (A) becomes  $w = 109(2.21)^{\frac{2}{7}} \approx 109(1.254) \approx 137$ . This does not match the target, so eliminate (A). Choice (B) becomes  $w = 109(1.12)^{\frac{2}{7}}$ , which will be even smaller than (A). Eliminate (B). Choice (C) becomes  $w = 109(1.84)^2 = 109(3.3856) \approx 369$ . Eliminate (C). Choice (D) becomes  $w = 109(1.12)^{7(2)} \approx 109(4.887) \approx 532.7$ . The correct answer is (D).
25. **D** The question asks for a true statement regarding the results of a study that was conducted. Read each answer carefully and use Process of Elimination. Choice (A) refers to the size of the sample. Generally, the larger the sample, the more reliable the study results. No numbers are given regarding the sample size or number of residents, so this is difficult to determine. Keep (A) for now, but check the other answers. Choice (B) refers to the days that the study was conducted. While doing the study two days instead of one would improve the results, there is no way to tell if that will make the result completely reliable. Keep (B) but see if there is a better answer. Choice (C) refers to the location of the study. A busier location may help get more respondents, but it is unclear if that will make the study reliable. Eliminate (C). Choice (D) refers to bias in the study, which means that the group involved might be more inclined to a certain outcome. Since the study only involved people entering the library, the results are likely to favor library use more than if randomly selected people had participated. Since exact numbers were not given, the sample size is less of a problem than the bias in the sample. Eliminate (A). The correct answer is (D).
26. **A** The question asks for the value of  $d$  in point  $(c, d)$ . Start by determining the value of  $c$  in terms of  $d$ . The question states that  $\frac{c}{d} = \frac{3}{2}$ . Cross-multiply to get  $2c = 3d$ . Divide both sides by 2 to get  $c = \frac{3d}{2}$ . Next, use the given information to determine the equation of the lines. Use slope-intercept form:  $y = mx + b$ , where  $(x, y)$  is a point on the line,  $m$  is the slope, and  $b$  is the  $y$ -intercept. The first line contains point  $(c, d)$  and has a slope of 2, so its equation is  $d = 2c + b$ . Substitute  $\frac{3d}{2}$  for  $c$  to get  $d = 2\left(\frac{3d}{2}\right) + b$ , which becomes  $d = 3d + b$  or  $-2d = b$ . The second line contains the point  $(3, 2d)$ ,

has a slope of  $-3$ , and the same  $y$ -intercept as the first equation, so its equation is  $2d = -3(3) + b$ , or  $2d = -9 + b$ . Substitute  $-2d$  for  $b$  to get  $2d = -9 - 2d$ . Add  $2d$  to both sides to get  $4d = -9$ . Divide

both sides by 4 to get  $d = -\frac{9}{4}$ . The correct answer is (A).

27. **C** The question asks for the relationship between two variables. When given a table of values and asked for the correct equation, plug values from the table into the answer choices to see which one works. In the answers,  $n$  is *years after 2010*. Therefore, according to the table,  $n = 3$  when the unemployment rate was 13%. Choice (A) becomes  $1.5(3) + 11.5$ , which is  $4.5 + 11.5$ , or 16. This does not match the unemployment rate; eliminate (A). Choice (B) becomes  $0.5(3 - 2,010) + 11.5$ , which is  $0.5(-2,007) + 11.5$  or  $-1,003.5 + 11.5$ , which is  $-992$ . Eliminate (B). Choice (C) becomes  $0.5(3) + 11.5$ , which is  $1.5 + 11.5$ , or 13. Keep (C), but check (D) just in case. Choice (D) becomes  $-1.5(3) + 11.5$ , which is  $-4.5 + 11.5$ , or 7. Eliminate (D). The correct answer is (C).
28. **A** The question asks for the model that best fits the data. The question states that water is added *at a constant rate*. Therefore, the rate of increase is linear rather than exponential. Eliminate (C) and (D), which are equations for exponential growth. Next, find a value from the data to plug in to the remaining answers. The pool *contains 60% more water after the hose has run for 5 hours*. The pool initially contained 750 gallons, so after 5 hours it contains  $750 + 750 \times \frac{60}{100} = 1,200$  gallons. Therefore, when  $t = 5$ , the answer should equal 1,200. Choice (A) becomes  $750 + 90(5)$ , which is  $750 + 450$  or 1,200. This is true, so the correct answer is (A).
29. **D** The question asks for the value of a function. In function notation, the number inside the parentheses is the  $x$ -value that goes into the function, and the value that comes out of the function is the  $y$ -value. The vertex of the graph of function  $h$  is at  $(-1, -3)$ , so  $a = -1$  and  $h(a) = h(-1) = -3$ . Substitute to get  $f(h(a)) = f(-3)$ . Use the table to determine that  $f(-3) = 11$ . The correct answer is (D).
30. **B** The question asks for a true statement based on the data. Consider each answer and use Process of Elimination. Choice (A) compares the ranges of Group A and Group B. The range of a list of values is the greatest value minus the least value. In Group A, the greatest value is 9 and the least value is 3, so the range is  $9 - 3$ , which is 6. In Group B, the greatest value is 13 and the least value is 8, so the range is  $13 - 8 = 5$ . Eliminate (A), which says the range of Group B is larger. Also eliminate (D), which says the ranges are equal. Choices (B) and (C) compare the standard deviation of the two groups. Standard deviation is a measure of how close together the data points are in a group of numbers; a list with numbers close together has a small standard deviation, whereas a list with numbers spread out has a large standard deviation. In Group A, the data points are evenly distributed, whereas in Group B most of the data points are around 12. Therefore, the standard deviation of Group B must be less than the standard deviation of Group A. Eliminate (C). The correct answer is (B).
31. **14** The question asks for the value of  $n$  if the two equations represent the same line. Make the second equation equal to the first by multiplying the second equation by 2 to get  $14x - 8y = 18$ . Both equations are equal, so  $n$  must equal 14. The correct answer is 14.
32. **66** The question asks for a measurement and gives conflicting units. When dealing with unit conversion, make a proportion, being sure to match up units. The proportion is  $\frac{1 \text{ liter}}{3 \text{ milligrams}} = \frac{22 \text{ liters}}{x \text{ milligrams}}$ . Cross-multiply to get  $x = 66$ . The correct answer is 66.

33. **9** The question asks for the value of  $c$  in the equation. Start by substituting  $-3$  for  $x$  to get  $\frac{1}{3}c + (-3) = 0$ . Add 3 to both sides of the equation to get  $\frac{1}{3}c = 3$ . Multiply both sides by 3 to get  $c = 9$ . The correct answer is 9.
34. **6** The question asks for the value of a variable in a system of equations. Since  $p(x) = q(x)$  where the two functions intersect, one way to solve this would be to graph both functions on a graphing calculator and trace to find the intersections. Another method is to solve algebraically by setting the equations equal to one another. This gives  $15 - 5x = \frac{1}{3}(x - 9)^2 - 18$ . Add 18 to both sides to get  $33 - 5x = \frac{1}{3}(x - 9)^2$ . Clear the fraction by multiplying both sides by 3 to get  $99 - 15x = (x - 9)^2$ . Use FOIL (First, Outer, Inner, Last) on the right side to get  $99 - 15x = x^2 - 9x - 9x + 81$ , which is  $99 - 15x = x^2 - 18x + 81$ . Add  $15x$  to both sides to get  $99 = x^2 - 3x + 81$ . Subtract 99 from both sides to get  $0 = x^2 - 3x - 18$ . Factor by finding two numbers that add to  $-3$  and multiply to  $-18$ . Those numbers are  $-6$  and  $3$ , so the equation becomes  $0 = (x - 6)(x + 3)$ . Set each factor equal to 0 and solve to get  $x - 6 = 0$  or  $x = 6$  and  $x + 3 = 0$  or  $x = -3$ . The question asks for the positive  $x$ -value. The correct answer is 6.
35. **0.6** The question asks for the value of the sum of two trigonometric functions. The functions of sine and cosine usually apply to right angles and give the ratio of the side opposite or adjacent to the angle, respectively, to the hypotenuse. This question has a right angle, but the angles in question are not the other two angles of triangle  $ABC$ . The angles  $\angle DBA$  and  $\angle DBC$  add together to make the right angle, so use the fact that  $\sin(x^\circ) = \cos(90^\circ - x^\circ)$ . If  $\angle DBC$  is  $x^\circ$ , then  $\angle DBA$  is  $(90^\circ - x^\circ)$  and  $\sin(\angle DBC) = \cos(\angle DBA) = 0.3$ . Therefore,  $\cos(\angle DBA) + \sin(\angle DBC) = 0.3 + 0.3 = 0.6$ . The correct answer is 0.6.
36. **0.11** The question asks for a rate in terms of points per minute. Begin by reading the question to find information on the average number of points lost. The question states that *during two days of trading, the Dow Jones Industrial Average lost 68.9 points* and that *there were 5 hours of trading during each of the two days combined*. Therefore, there were  $2 \times 5 = 10$  hours of trading. There are 60 minutes in an hour, so 10 hours is  $60 \times 10 = 600$  minutes. To determine rate, divide amount by time:  $\frac{68.9 \text{ points}}{600 \text{ minutes}} \approx 0.1148$  points per minute. The question asks for the rate to the nearest hundredth of a point per minute, so round to 0.11. The correct answer is 0.11.
37. **1.3** The question asks for the value of  $r$  in the function. Use the table to fill in the other variables and solve. Choose a point that makes the math easier. Because the exponent is divided by 2 in the function, choose 2 days. At 2 days after germination, the plants weighed 6.6 grams, so  $d = 2$  and  $H(2) = 6.6$ . The function becomes  $6.6 = 5.0r^{\frac{2}{2}}$ , which is  $6.6 = 5.0r^1$  or  $6.6 = 5.0r$ . Divide both sides by 5.0 to get  $r = 1.32$ . The question asks for the value of  $r$  rounded to the nearest tenth, so round 1.32 to 1.3. The correct answer is 1.3.



38. **9.6** The question asks for the difference between the masses of two groups of plants. Start by determining the mass of the 4 plants that germinated 4 days ago. According to the table, plants that germinated 4 days ago have a mass of 8.4 grams per plant, so 4 plants would have a mass of  $4 \times 8.4 = 33.6$  grams. Next, find the mass of the 3 plants that germinated 8 days ago. These plants have an average mass of 14.4 grams, so their total mass is  $3 \times 14.4 = 43.2$  grams. To find the difference, subtract:  $43.2 - 33.6 = 9.6$  grams. The correct answer is 9.6.

## Section 5: Experimental

- A** Note the question! The question asks whether the phrase should be added, so it's testing consistency of ideas and precision. If the phrase is consistent with the first part of the sentence and it plays a precise role, then it should be added. The first part of the sentence states that the Orbiter crashed on Mars. The new phrase states that it should have gone *into orbit around the planet to collect and transmit data*. This explains what the Orbiter's mission was supposed to be, so it's consistent and plays a precise role. The phrase should be added, so eliminate (C) and (D). The phrase does *give details that clarify that the crash was unexpected*, so keep (A). The phrase does not *establish an important shift in focus*, so eliminate (B). The correct answer is (A).
- A** The change in the answer choices is from a noun to different pronouns, so the question is testing precision. Determine the subject of the pronoun, and choose an answer that makes the meaning consistent and precise. The underlined portion must establish who is *against adopting the metric system*. At this point in the passage, no specific party has been established, so the most precise answer will be the specific noun, not the general pronoun. *People* is a specific noun, so keep (A). *They, them, and those* are general pronouns, so eliminate (B), (C), and (D). The correct answer is (A).
- C** Verbs are changing in the answer choices, so the question is testing consistency of verbs. A verb must be consistent with its subject and with the other verbs in the sentence. All the answer choices are consistent with the subject of the verb, *the other group*, so look for other verbs. The first part of the sentence states that *one group used*, so the underlined portion must be consistent with that verb. Only *used* is consistent. Eliminate (A), (B), and (D). The correct answer is (C).
- D** Note the question! The question asks where sentence 2 should be placed, so it's testing consistency. Determine the subject matter of the sentence, and find the other sentence that also discusses that information. Sentence 2 states that *neither group realized*, so it should be placed after the sentence that mentions the two groups. Only sentence 5 mentions *one group* and *the other group*, so sentence 2 should be placed after sentence 5. The correct answer is (D).
- B** Note the question! The question asks for the best combination, so it's testing concision. Select the shortest choice that eliminates the redundancy present in the original sentences. Evaluate (B) first because it's the shortest. The pronoun *which* refers to the *replacement of Roman numerals with the base-ten Arabic numbering* in the first part of the sentence. Because *which* replaces that same phrase in the second part of the sentence, the redundancy has been eliminated and the answer is concise. The correct answer is (B).
- B** The number and placement of the commas is changing in the answer choices, so the question is testing comma usage. The commas are changing in two places (and there's a dash), so check for unnecessary information. Because *decimal* and *base-ten* mean the same thing, it is unnecessary to say it twice. Therefore, there should be either commas or dashes before and after the phrase *or base-ten*. The comma and the dash cannot be used together, so eliminate (D). Eliminate (A) and (C) because the commas are in the wrong place. The correct answer is (B).

7. **D** The number and placement of the commas is changing in the answer choices, so the question is testing comma usage. The sentence does not contain a list, so check for unnecessary information. Removing any of the phrases between the commas creates an incomplete sentence. Therefore, all the phrases are necessary, and there is no reason to use a comma. The correct answer is (D).
8. **C** Note the question! The question asks for the explanation of how the metric system was important for trade over long distances, so it's testing consistency of ideas. Select the choice that is consistent with *important for trade over long distances*. *Cheating* is not consistent with *long distances*, so eliminate (A). Although (B) mentions *long-distance*, *different currencies* is not consistent with the *metric system*; eliminate (B). The *buyers and sellers not being from the same place* is consistent with *trade over long distances*, so keep (C). The type of *goods* is not consistent, so eliminate (D). The correct answer is (C).
9. **C** First, the pronouns are changing in the answer choices, so the question is testing consistency. The pronoun must be consistent in number with the noun it is replacing. The noun is *France*, which is singular. Thus, the pronoun must also be singular. Eliminate (A) and (B), which are plural. Next, the verbs are changing, so the question is testing consistency. A verb must be consistent with its subject and with the other verbs in the sentence. The sentence states that *France was*, which is the simple past tense. Thus, the underlined portion must also be in the simple past tense. *Organized* is the simple past tense, so keep (C). *Had organized* includes the unnecessary helping verb *had*, so eliminate (D). The correct answer is (C).
10. **C** Note the question! The question asks for the choice that maintains the style and tone of the passage, so it's testing consistency. The overall tone of the passage is semi-formal and educational, so the correct answer should be consistent with this tone. Choices (A), (B), and (D) are too informal. The correct answer is (C).
11. **A** The transition phrase is changing in the answer choices, so the question is testing consistency of ideas. The sentence contains two phrases separated by a comma, so evaluate those two ideas to determine how they should be connected. The first part states that *the American colonies were part of the British Empire*, and the second part states that *they used the British Imperial System of measurement*. These ideas are similar, so eliminate (B) and (D) because they indicate opposite ideas. Using *therefore* would create two complete ideas separated by a comma. GO punctuation cannot separate two complete ideas, so eliminate (C). The correct answer is (A).
12. **D** The vocabulary is changing in the answer choices, so this question is testing word choice. Look for a word whose definition is consistent with the other ideas in the sentence. The sentence is trying to state that both Jefferson and Franklin were proponents of "getting rid of" the British system, so the correct answer must be consistent with this idea. *Sacrificing* means "to kill or destroy something as an offering," so eliminate (A). *Ducking* means "to get out of the way of something," so eliminate (B). *Evading* means "to avoid something," so eliminate (C). *Abandoning* means "to give something up" or to "leave something behind." This is consistent with the rest of the sentence. The correct answer is (D).
13. **D** The transition phrase is changing in the answer choices, so the question is testing consistency of ideas. Evaluate the ideas that come before and after the transition to determine how they should be connected. The prior idea is that both Jefferson and Franklin were proponents of adopting the metric system. The next idea is that there were *insurmountable roadblocks to adopting the metric system*. These are opposite ideas, so a transition that changes direction is needed. *For example*, *moreover*, and *thus* all indicate the same direction, so eliminate (A), (B), and (C). *However* indicates a change in direction. The correct answer is (D).

14. **B** The punctuation is changing in the answer choices, so the question is testing STOP and GO punctuation. Use the vertical line test, and identify the ideas as complete or incomplete. Draw the vertical line between the words *War* and *it*. The first phrase is an incomplete idea, and the second phrase is a complete idea. STOP punctuation can only come between two complete ideas, so eliminate (A) and (C), which both contain STOP punctuation. HALF-STOP punctuation must come after a complete idea, so eliminate the colon in (D). A comma is GO punctuation, which can separate an incomplete idea from a complete idea. The correct answer is (B).
15. **B** The vocabulary is changing in the answer choices, so the question is testing word choice. The correct choice will match the idea of *sending a delegation to France* to the purpose of the trip. The purpose was not *by learn* or *of learn*, so eliminate (C) and (D). If the word *for* is used, the phrase should say *for learning*, so eliminate (A). The purpose was *to learn about the metric system*. The correct answer is (B).
16. **A** Note the question! The question asks for the best introduction to this paragraph, so it's testing consistency of ideas. The previous paragraph ends by stating that the United States kept the British system. This paragraph discusses a few times that the United States tried and failed to convert to the metric system. The correct answer will be consistent with this idea. *Multiple attempts...to establish the metric system* is consistent, so keep (A). Discussing *France* is not consistent, so eliminate (B). Eliminate (C) because it does not mention the metric system. The topic of *political upheaval* is not consistent, so eliminate (D). The correct answer is (A).
17. **C** The phrases are changing in the answer choices, so the question is testing concision and precision. Select the shortest choice whose meaning is precise. The terms *enthusiasts* and *admirers* mean the same thing, so that idea should not be repeated. Eliminate (A) and (D) because they are redundant. Choices (B) and (C) mean the same thing, so select the more concise choice. The correct answer is (C).
18. **A** Note the question! The question asks for the conclusion of the essay, so it's testing consistency of ideas. The essay started by stating that some people believe the metric system caused the Mars Climate Orbiter to crash, and it ended by stating that the United States had been unable to make the metric system mandatory. The correct answer must be consistent with these ideas. Choice (A) states that our *speed limit signs* are not in *kilometers per hour* and revisits the *Mars Climate Orbiter crash*, so keep it. Stating what *school children learn* is not consistent, so eliminate (B). Discussing *businesses* in relation to *government agencies* is not consistent, so eliminate (C). Stating that *no one is motivated to make the change* is not consistent, so eliminate (D). The correct answer is (A).



# RAW SCORE CONVERSION TABLE

# SECTION AND TEST SCORES

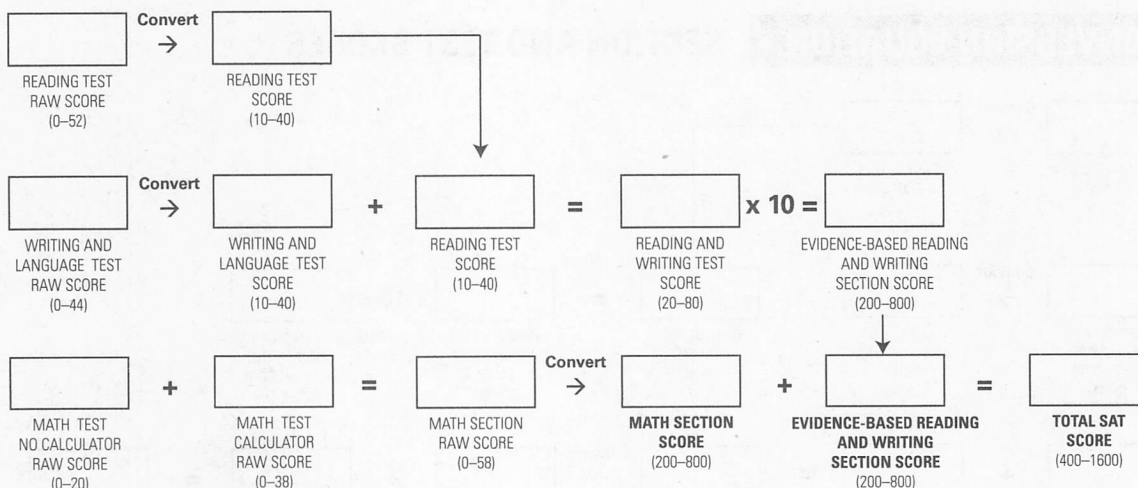
Raw Score (# of correct answers)	Math Section Score	Reading Test Score	Writing and Language Test Score
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1	200	10	10
2	210	10	10
3	230	11	10
4	240	12	11
5	260	13	12
6	280	14	13
7	290	15	13
8	310	15	14
9	320	16	15
10	330	17	16
11	340	17	16
12	360	18	17
13	370	19	18
14	380	19	19
15	390	20	19
16	410	20	20
17	420	21	21
18	430	21	21
19	440	22	22
20	450	22	23
21	460	23	23
22	470	23	24
23	480	24	25
24	480	24	25
25	490	25	26
26	500	25	26
27	510	26	27
28	520	26	28
29	520	27	28

Raw Score (# of correct answers)	Math Section Score	Reading Test Score	Writing and Language Test Score
30	530	28	29
31	540	28	30
32	550	29	30
33	560	29	31
34	560	30	32
35	570	30	32
36	580	31	33
37	590	31	34
38	600	32	34
39	600	32	35
40	610	33	36
41	620	33	37
42	630	34	38
43	640	35	39
44	650	35	40
45	660	36	
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48	680	38	
49	690	38	
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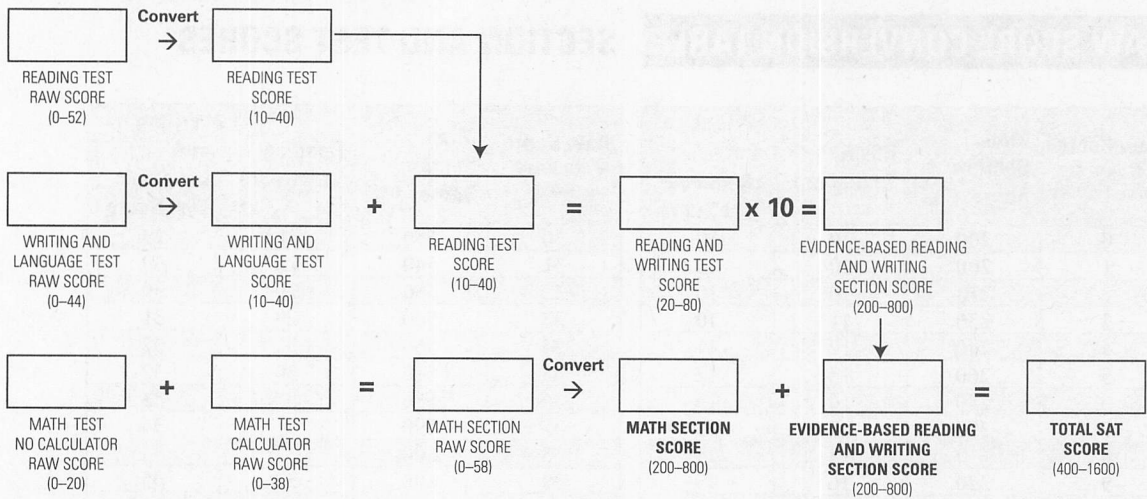
\*Please note that these scores are best approximations and that actual scores on the SAT may slightly vary, depending on individual adaptations made by the College Board.

## CONVERSION EQUATION 1

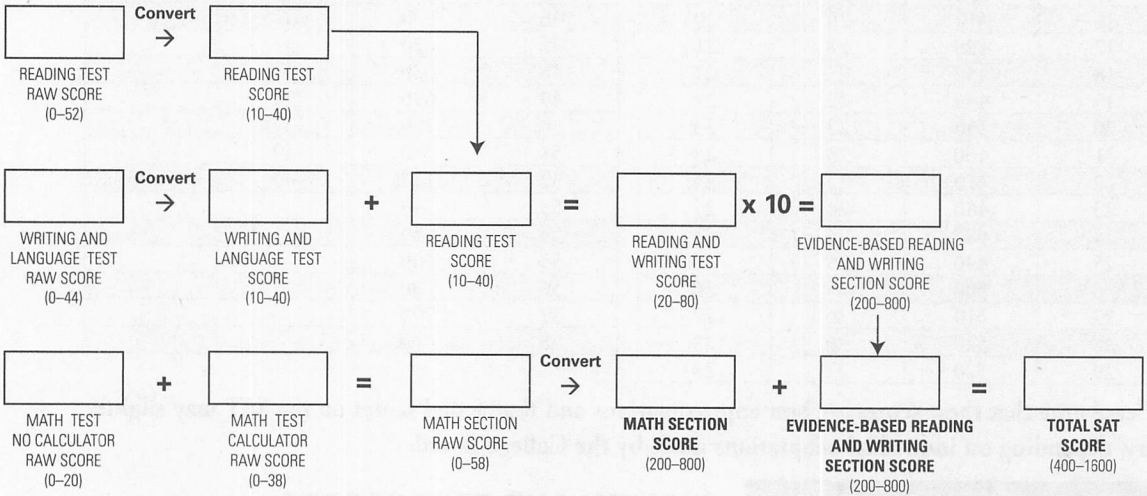
## SECTION AND TEST SCORES



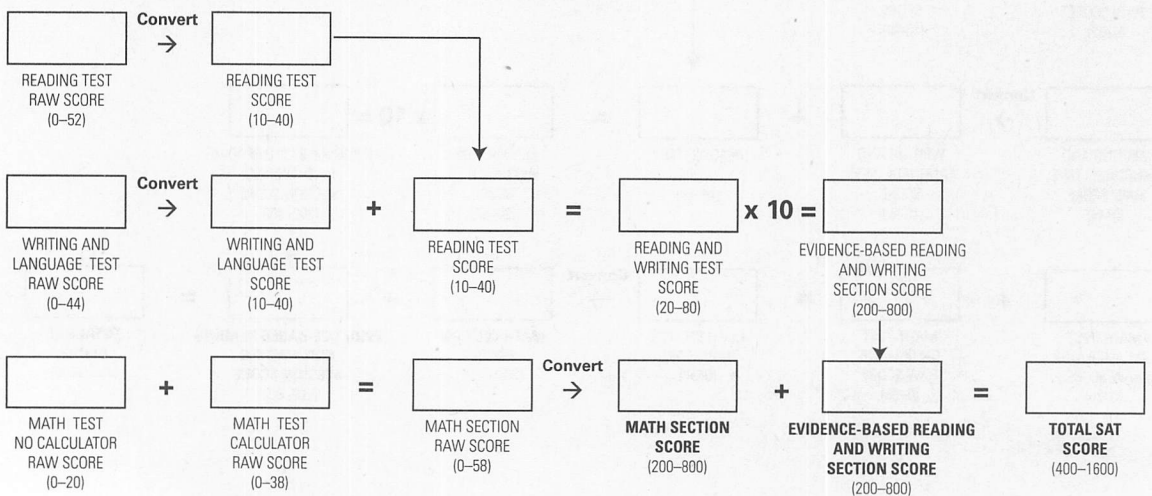
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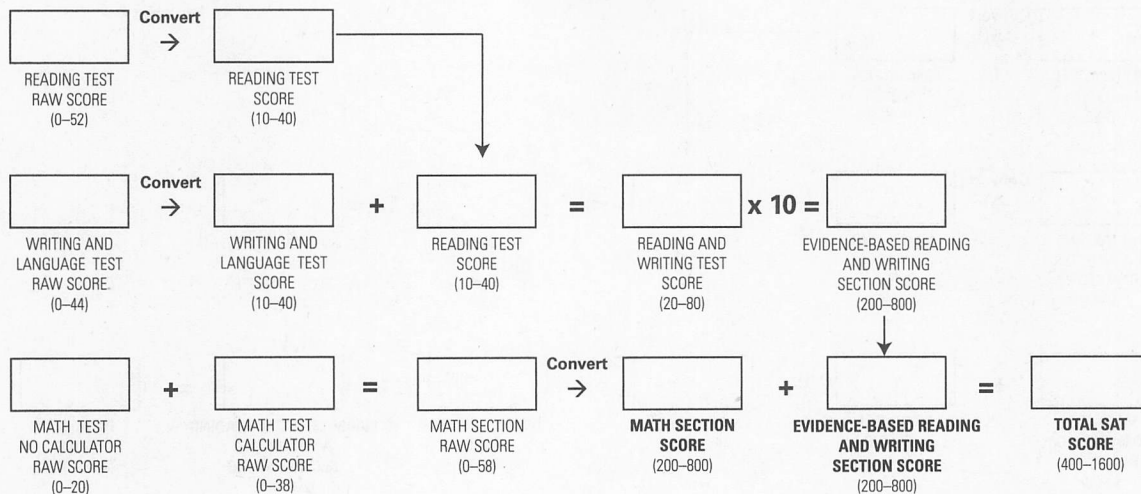
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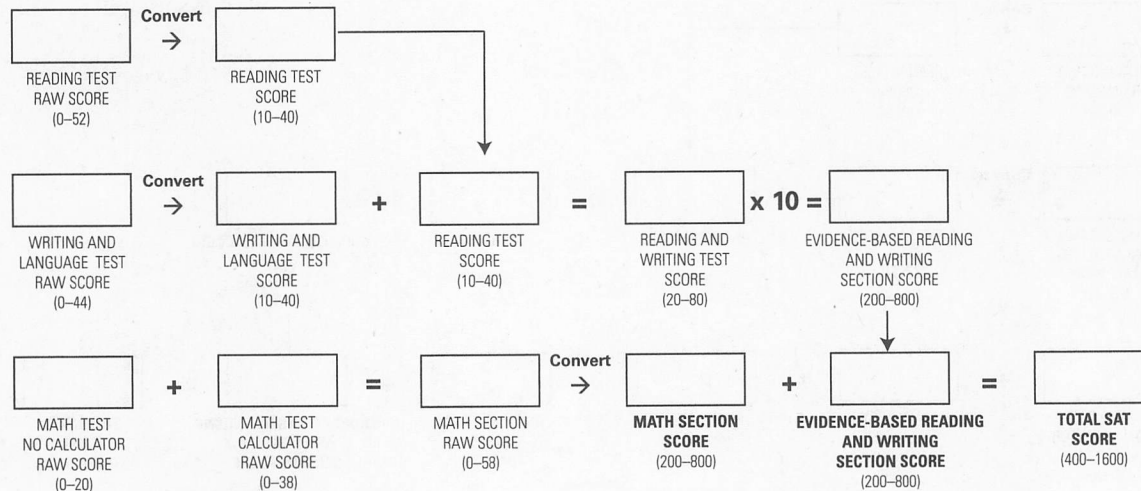
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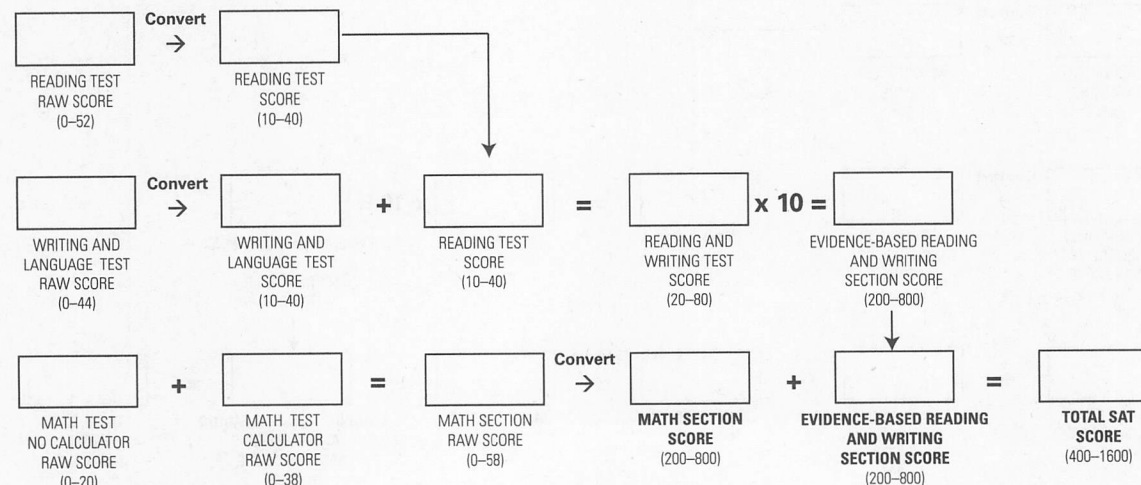
## CONVERSION EQUATION 5 SECTION AND TEST SCORES



## CONVERSION EQUATION 6 SECTION AND TEST SCORES

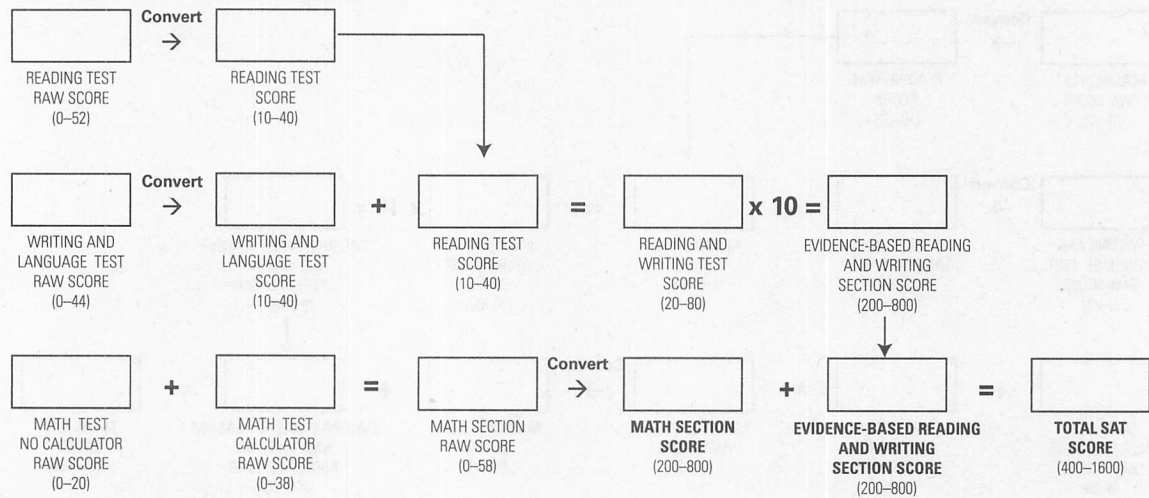


## CONVERSION EQUATION 7 SECTION AND TEST SCORES

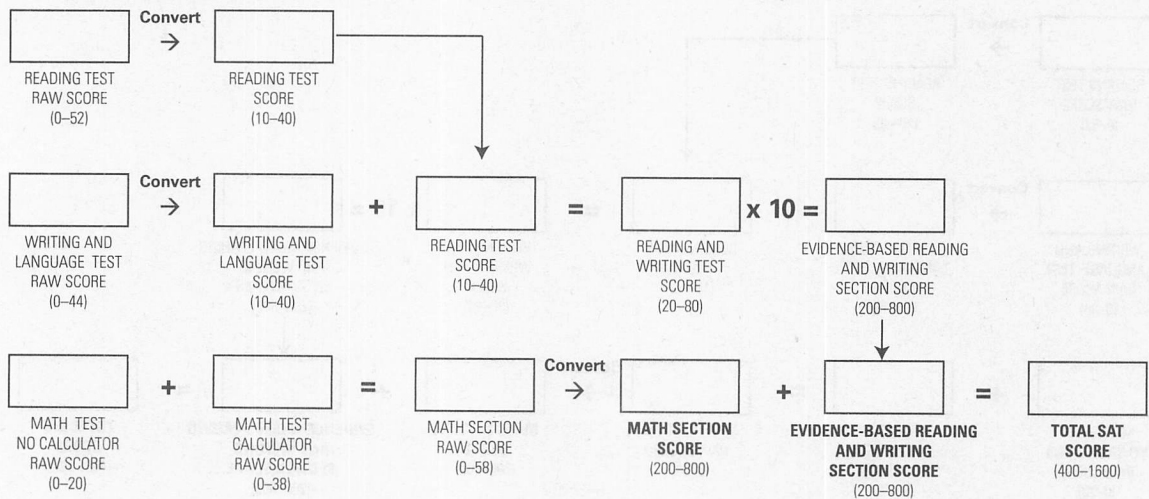




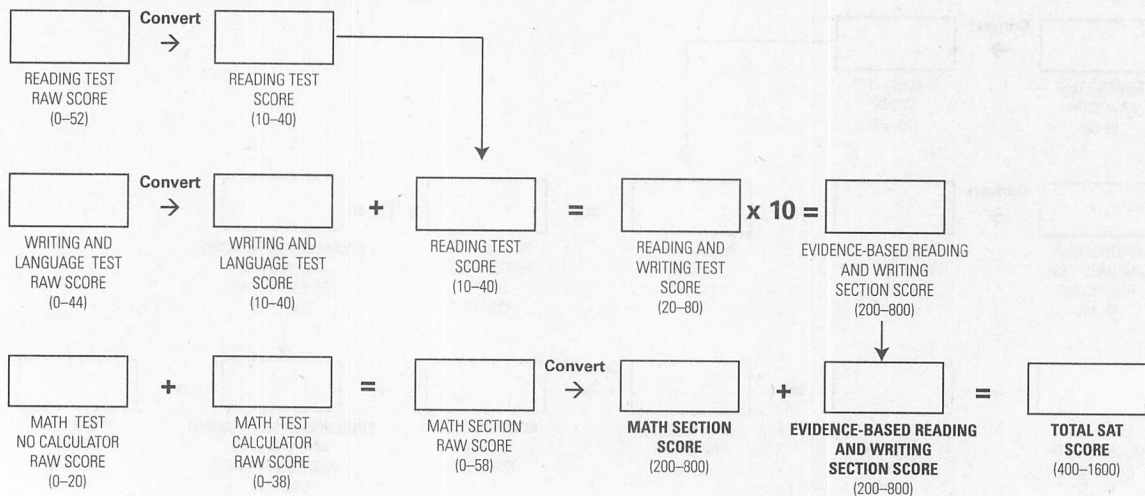
## CONVERSION EQUATION 8 SECTION AND TEST SCORES



## CONVERSION EQUATION 9 SECTION AND TEST SCORES



## CONVERSION EQUATION 10 SECTION AND TEST SCORES



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